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DISEASES CAUSED BY BACTERIA AND FUNGI

HUNT, G. A. & MOSES, A. J. (1958). **Acute infection of mice with Smith strain of** *Staphylococcus aureus*. — *Science* **128,** 1574-1575. [Authors' abst. modified.] **1650**

Two serologically distinct variants found in a unique strain of staphylococcus produce coagulase and are phagocytized, but only one is virulent for mice. Only virulent cocci grow rapidly within leucocytes. Leucocyte destruction by the virulent strain with release of many phagocytized cocci, precedes death. The leucocidal agent may be delta-haemolysin.

COHEN, S. G., DZURY, D. S. & MICHELINI, F. J. (1958). **Immune responses to** *Staphylococcus aureus* **antigens.** — *J. infect. Dis.* **103,** 61-66. **1651**

In agar gel precipitin tests, immune sera from rabbits immunized with the soluble bacterial cell protoplasm from living cells of an α-toxin producing strain of *Staph. aureus* exposed to ultrasonic vibrations, showed 9 distinct antigenic components. Only one of these showed a reaction of identity with one of the constituents of antiserum to toxoid and only 3 were identified with antibody components of antiserum to phenol-killed whole cells. Of the 4 antibodies evoked by toxoid, only 2 showed reactions of identity with constituents of the soluble preparation of bacterial protoplasm and one was identified with cellular antigen. Killed intact bacterial cells evoked antibody responses to 4 of the antigens that were noted in preparations of soluble cell protoplasm and to 3 and occasionally 4 toxoid components. For maximal qualitative immune response against this micro-organism, it would appear that all possible sources of bacterial antigens should be used.—A. ACKROYD.

OEDING, P. & WILLIAMS, R. E. O. (1958). **The type classification of** *Staphylococcus aureus*: **A comparison of phage-typing with serological typing.** — *J. Hyg., Camb.* **56,** 445-454. [Authors' summary modified.] **1652**

A comparison has been made between the bacteriophage and serological methods for identifying types among coagulase-positive staphylococci. In only a few cases was one particular serotype clearly related to a particular phage-type, and in several cases single 'types' recognized by one method contained several different 'types' when tested by the second method. Nevertheless, when sets of strains isolated in the investigation of epidemics or of the nose and skin carrier state of particular individuals were tested by the two methods, consistent results were obtained: an individual combination of phage-type and serotype appeared to be stable.

The principal advantages of phage-typing are that it is able to recognize more types than the serological method, and that the distinctions between the types are based on a greater number of different reactions. The advantages of the serological method are the smaller number of untypable strains and its greater technical simplicity.

SMITH, H. WILLIAMS. (1958). **An outbreak of bovine mastitis caused by** *Streptococcus pneumoniae*. — *Vet. Rec.* **70,** 986-987. [Authors' summary modified.] **1653**

A severe outbreak of acute mastitis due to *Str. pneumoniae* Type III affecting 6 of 25 cows in one herd is described. Systemic administration of penicillin was a satisfactory form of treatment. *Str. pneumoniae* Type III was isolated from the throat of the cowman, who was considered to be the source of infection.

MACLACHLAN, G. K., WILSON, C. D. & STUART, P. (1958). **A herd outbreak of mastitis associated with** *Streptococcus pneumoniae* **infection.**—*Vet. Rec.* **70,** 987-988 & 989. [Authors' summary modified.] **1654**

A serious outbreak of mastitis involving half the cows in a herd of 49 is described. Spread was by milking uninfected after infected cows and only one fresh case occurred in the clean

section of the herd after the known clinical cases were removed. The organism was a Type III pneumococcus and was peculiar in its growth requirements in that it would only grow in CO_2. It subsequently grew quite well aerobically when another brand of peptone was used.

Early cases responded well to large doses of penicillin given *via* the teat canal. One cow treated with penicillin i/m made a good recovery.

It was not possible to trace the source of the outbreak.

EASTERDAY, B. C., SIMON, J. & HANSON, R. P. (1958). **The use of the modified Whiteside test as a screen test for bovine mastitis.**—*J. Amer. vet. med. Ass.* **133,** 470-473. [Authors' summary modified.] **1655**

The modified Whiteside test (MWT) [Murphy & Hanson (*V.B.* **11,** p. 739)] and the California mastitis test (CMT) [*V.B.* **27,** 2881] in a limited number of cases were compared with the total counts of leucocytes and the bacteria isolated from the same quarter samples. There was little, if any, specific correlation between the MWT or CMT and the counts of leucocytes or the types of bacteria which could be isolated. Tests (MWT and CMT) which apparently detect only inflammatory products have limited value in a programme planned to eradicate or control mastitis caused by bacterial infection.

SCHÖNHERR, W. (1958). Euterkontrolle bei Milchkühen mit einem Indikatorpapier. **[Examination of the udder in cows with the aid of an indicator paper.]**—*Mh. VetMed.* **13,** 304-307. **1656**

S. described a commercially produced absorbent paper strip, impregnated in four places with a yellow indicator dye, the nature of which was not disclosed. A few drops of milk from each quarter are put on each yellow spot and change of colour within 3 min. noted. A bluish green or a green, darker than that of a line printed on the paper for comparison, is indicative of secretory disorders. Colour changes taking place after 3 min. are not diagnostic. Dairy personnel should use this test for routine examination and veterinarians should be notified of positive tests. In a field experiment involving 310 cattle the test was satisfactorily accurate since in 290 the results agreed with that of microscopic examination.—E.G.

THROOP, B. T. & SWANSON, E. W. (1958). **A study of penicillin tolerance of some organisms infecting the bovine mammary gland.**—*J. Amer. vet. med. Ass.* **133,** 467-470. [Authors' summary modified.] **1657**

Streptococci from infected udders in a herd intensively treated with penicillin did not show unusual resistance to penicillin *in vitro*. When organisms isolated from infected quarters were grown in increasing concentrations of penicillin, they developed resistance *in vitro*. Infection with a strain of *Streptococcus uberis* from an udder which had not been cleared by repeated penicillin treatment was easily controlled in another, experimentally infected, udder.

Micrococci and enterococci from infected udders were much more tolerant to penicillin than the usual mastitis streptococci.

NILÉHN, P.-O. & MÅNSSON, I. (1958). **The occurrence of β-streptococci in the intestine of healthy horses.**—*Nord. VetMed.* **10,** 699-702. [In English. Summaries in German and Swedish. Authors' summary modified.] **1658**

The authors isolated beta-haemolytic streptococci from 142 of 235 faeces samples from 212 healthy horses. All were shown by precipitation to belong to Lancefield's Group C. All were glucose and sorbitol-positive and trehalose-negative. 140 strains fermented lactose but 2 did not. The occurrence of these organisms in the intestines may partly explain why the streptococci are so often involved in infectious diseases of horses.

STĘPKOWSKI, S. & WOŁOSZYN, S. (1958). Paciorkowcowe zapalenie naczyń chłonnych u źrebiąt. **[Streptococcal lymphangitis in foals.]** — *Ann. Univ. M. Curie-Skłodowska, Sect. DD.* 1956 **11,** 229-267. [In Polish. Summaries in English and Russian.] **1659**

The disease affects foals 6 months to 2 years old, and mortality varies from 3 to 25%. Formation of nodules developing into ulcers along the subcutaneous lymphatic vessels is the most characteristic manifestation of the disease which in about 30% of cases starts as a suppurative conjunctivitis. There was no response to penicillin, streptomycin, neosalvarsan (neoarsphenamine) and topical application of ichthyol solution. On bacteriological examination of pus from lesions, *Streptococcus zooepidemicus* was recovered in 76·9% of cases, and in pure culture from 69·2%; and was pathogenic for mice, rabbits and g.pigs. In the authors' opinion *Str. zooepidemicus* is the causative agent, and climatic conditions especially high humidity, may be predisposing factors. An autogenous formolized vaccine proved useful in prophylaxis and in

treatment. To differentiate this disease from ulcerative lymphangitis the authors proposed the name streptococcal lymphangitis.—M. GITTER.

McPHILLIPS, J. (1958). **Specificity of agglutinins in milk.**—*Nature, Lond.* **182,** 869. **1660**

A marked increase in acid production by the streptococcal cultures ML1 and KH, which are slow acid producers in activity tests of cheese starters and are agglutinated in raw whole milk, was observed when they were grown in raw whole milk previously absorbed with homologous antigen. This indicates that the agglutination is specific.—A. ACKROYD.

WALZ, E. (1958). Die Einwirkung aerober Sporenbildner auf den Muskelfarbstoff. [**Action of aerobic spore-forming organisms on muscle pigments.**] — *Arch. Lebensmittelhyg.* **9,** 200-203. **1661**

Bacillus subtilis was capable of liberating myoglobin from meat and of forming porphyrins in meat.—R.M.

FLANDORFFER, K. (1957). Übertragung von Rindertuberkulose durch Melkmaschinen. [**Transmission of bovine tuberculosis by milking machines.**] — *Inaug. Diss. Hanover* pp. 32. **1662**

Four of a number of TB.-free calves, housed in a byre separated by a solid wall from adult reactors, yielded positive tuberculin reactions. These calves were thought to have become infected by tubercle bacilli disseminated by the exhaust of a milking machine pump, installed in their byre, but used by means of a vacuum-conducting system for the milking of the reactors in the adjacent byre. Viable tubercle bacilli were isolated from vacuum tanks and pipes in 3 of 30 farms in the Hanover district.

—E.G.

SOBIECH, T., LIPANOWICZ, J. & SARAPUTA, J. (1958). Odczyn hemaglutynacji według Middlebrook-Dubos u bydła reagującego dodatnio na tuberkulinę. [**The Middlebrook-Dubos test in tuberculin-positive cattle.**] — *Weterynaria, Wroclaw* No. 4. pp. 39-46. [In Polish. Summaries in English and Russian.] **1663**

In tuberculin tests on 260 cattle from 2 farms, Koch's O.T. revealed 211 (81·1%) positive reactors and P.P.D. 235 (90·4%). Clinical TB. in 11 animals was confirmed by bacteriological and biological examinations. The Middlebrook-Dubos haemagglutination test in tuberculin positive cattle gave negative results in 72·7% of animals. The authors reviewed the literature on the Middlebrook-Dubos test and consider it is of no practical value in diagnosis of bovine TB.—M. GITTER.

MELČICKÝ, J. (1958). Alergia a jej liečebné ovlivnenie pri tuberkulóze u hovädzieho dobytka špecifickým ferment antigénom FTA. [**Effect of a specific fermented antigen on the tuberculin reaction in cattle.**]—*Sborn. čes. Akad. zemědělsk. Věd.* **3 (31),** 489-502. [In Slovak. Summaries in English and Russian.] **1664**

The therapeutic value of a fermented tuberculin antigen [*V.B.* **21,** 2826 & **22,** 649] was tested in reacting cattle. Of 39 reactors, kept on pasture, and injected monthly with s/c doses of 10, 15 and 20 ml. of the antigen, 8 subsequently yielded negative, 16 doubtful and 15 positive tuberculin reactions. Of 47 kept in a byre, 10 yielded negative, 13 doubtful and 24 positive tuberculin reactions, following similar treatment. Ten untreated reactors continued to yield positive tuberculin reactions. Weight gains in treated animals ranged from 0·3–0·4 kg., in controls 0·1 kg. per day.—E.G.

LOTFY, O., GUINDI, S. M. & MOUSTAFA, I. H. (1957). **Comparative studies on Egyptian and other P.P.D. tuberculins in cows and buffaloes.**—*J. Egypt. vet. med. Ass.* October pp. 37-44. [In English. Authors' summary modified.] **1665**

The single intradermal test with Egyptian and Weybridge P.P.D. tuberculins has constantly shown uniform results with no discrepancy in 220 cows and 194 buffaloes. The single comparative test with the Egyptian, Weybridge and German P.P.D. tuberculins, when compared with the results of the French H.C.S.M. tuberculins on cows and buffaloes of known history, has proved to be of equal value in the detection of TB.

FRITZSCHE, K. & UNRUH, W. (1958). Untersuchungen über eine Verbesserung der Technik der Tuberkulin-Kehllappenprobe beim Huhn. [**Improvement of the technique for the wattle tuberculin test in fowls.**] — *Berl. Münch. tierärztl. Wschr.* **71,** 303-305. **1666**

A treble wattle tuberculin test was advocated in preference to a single one, injecting 0·1 ml. of tuberculin on three successive days, alternating sides. Results were read 24 hours after each injection and reactors eliminated. Of 1,071 fowls so tested, 54 reacted to the first, 48 to the second and 36 to the third test. TB. was confirmed P.M. in 65 of 75 reactors examined.

—E.G.

BOYADZHAN, G. K. (1958). **[Resistance of chicks to experimental tuberculosis in relation to the quality of the eggs from which they hatch.]**—*Veterinariya, Moscow* **35**, No. 11. pp. 25-28. [In Russian.] **1667**

Chicks hatched from the eggs of hens with a high concentration of carotene in the blood resisted air-borne and peroral infection with avian type tubercle bacilli better than chicks from poorly fed hens.—E. L. URCH.

KUNOFSKY, S. & KATZ, J. (1958). **The stability of the tuberculin reaction.** — *Amer. Rev. Tuberc.* **78**, 862-870. [Summaries in French and Spanish. Authors' summary modified.] **1668**

In a group of human beings tested by the Mantoux method and re-tested at varying intervals for up to 12 years, it was found that the tuberculin reaction was quite unstable and often disappeared. One factor contributing to this was the change in exposure to tuberculous infection.

I. MAGNUS, K., GULD, J., WAALER, H. & MAGNUSSON, M. (1958). **Stability of purified tuberculin in high dilution.** — *Bull. World Hlth Org.* **19**, 765-782. [Summary in French.] **1669**

II. WAALER, H., GULD, J., MAGNUS, K. & MAGNUSSON, M. (1958). **Adsorption of tuberculin to glass.**—*Ibid.* 783-798. [Summary in French.] **1670**

III. MAGNUSSON, M., GULD, J., MAGNUS, K. & WAALER, H. (1958). **Diluents for stabilization of tuberculin.**—*Ibid.* 799-828. [Summary in French. Authors' synopses modified.] **1671**

I. The effect of storage was studied on the potency of 5 TU dilutions (5 tuberculin units per 0·1 ml.) of the purified tuberculin RT 19–21. Dilutions stored at 2° to 4°C., 20°C. or 37°C. for different periods up to 18 months were compared by i/d testing in 900 B.C.G.-vaccinated children and 500 B.C.G.-vaccinated g.pigs. The results showed unexpected variability, apparently due to differences in potency both between dilutions prepared at different times and between ampoules of the same dilution. Only limited conclusions could be drawn. At 2° to 4°C. the effect of storage seemed slight, potency being reduced by less than 25% after 18 months. At the higher temperatures potency decreased more rapidly. But the dilutions could be stored at room temp. (20°C.) for some months without significant loss of potency.

II. Preliminary investigations suggested that adsorption of tuberculin to the container might be the cause of variations in potency. A series of experiments on g.pigs demonstrated that tuberculin is, in fact, adsorbed to the glass surface: tuberculin-active eluates were obtained from ampoules previously used for tuberculin, with a buffer eluant containing Tween 80. It is estimated that a 5 TU dilution of RT 19–21 loses about 60% of its active substance through adsorption. The amount adsorbed differs from one ampoule to another. The extent of adsorption depends on the strength of the dilution, temp., and the duration and extent of contact between dilution and container. Shaking reduces adsorption. There are indications that the purified tuberculin RT 19–21 is composed of at least two fractions of different adsorbability. The accuracy of tuberculin testing would be greatly increased if adsorption could be prevented.

III. Adsorption was most evident in dilutions prepared with saline or with phosphate buffer containing dextran. The inclusion in phosphate buffer diluent of small amounts of proteins or synthetic surface-active agents decreased or prevented adsorption. A boric acid–sodium borate diluent containing gum arabic, previously recommended for the preparation of stabilized tuberculin dilutions, was ineffective. The most suitable diluent for the preparation of stable tuberculin dilutions was 0·005% soln. of Tween 80 in phosphate-buffered saline; this diluent appeared to prevent adsorption under a variety of experimental conditions. The inclusion of Tween 80 in the diluent had little or no effect on the general storage stability of purified tuberculin.

SEIBERT, F. B. (1958). **The interplay of an immune substance with tuberculopolysaccharide and its antibody in tuberculosis.**—*J. infect. Dis.* **103**, 52-60. **1672**

Culture of B.C.G. on medium to which had been added whole normal immune or tuberculous rabbits' sera, their gamma globulin fractions, specific antigens or lysozyme showed that antibodies *per se* have little or no direct bacteriostatic or bactericidal effect on finely dispersed B.C.G. organisms *in vitro*. Tuberculopolysaccharide-antibody plays an important indirect role in immunity by combining with freely circulating tuberculopolysaccharide and so diverting it from occupying the effective groups of a naturally occurring antimicrobial agent which are thus left free to act on the tubercle bacillus. This heat-stable antimicrobial agent for tubercle bacilli was present in the gamma-globulin fraction especially from normal serum. Its effect in whole serum was largely counterbalanced by the presence of albumin which is a growth stimulant. Its antimicrobial activity could be suppressed by the hapten tuberculopolysaccharide,

indicating that this component is probably the vulnerable site of the bacillus for attack. Evidence suggested that this antimicrobial agent may be lysozyme.—A. ACKROYD.

FRANC, Z., HAIS, I. M. & HOREŠOVSKÝ, O. (1958). **Antituberculous factors of milk.** —*Nature, Lond.* **182,** 884-885. **1673**

Bovine, caprine and human milk, milk-whey, and milk-whey dialysate totally inhibited the growth of *Mycobacterium tuberculosis*, Strain H37Rv, *in vitro*. A fractionation procedure is described whereby 3 factors which had an inhibitory influence were obtained from milk-whey. They were inactive against B.C.G., *M. phlei, M. smegmatis, Streptococcus haemolyticus, Staphylococcus aureus, Escherichia coli, Pseudomonas pyocyanea,* and *Bacillus subtilis*. —A. ACKROYD.

OSHIMA, S., FUJITA, Y., TAKEOKA, A., NAKAJIMA, M. & TSUJI, S. (1958). **Chemical analysis of the role of humoral factors in native and acquired resistance to tuberculosis.**—*Amer. Rev. Tuberc.* **78,** 884-898. [Summaries in French and Spanish. Authors' summary modified.] **1674**

Tuberculo-inhibiting activity in the low molecular fraction of human urine, serum of various animals (especially rabbits), and organ extracts of rabbits was analysed by fractionation.

The serum protein of non-immunized and immunized rabbits was fractionated by the zone electrophoresis technique, and the influence of the fractions on the growth of virulent tubercle bacilli of human origin *in vitro* was examined. The albumin fraction from non-immunized normal rabbits stimulated growth and the γ-globulin fraction inhibited growth slightly.

After immunization of the animals, the growth-enhancing activity of the albumin fraction was apparently reduced, but the action of the globulin fraction on tubercle bacilli was almost unchanged. No increased inhibitory activity of the γ-globulin fraction on the growth of bacilli was noted. It was therefore concluded that the increased tuberculostatic activity of immune serum or body fluid was solely due to the change in the albumin fraction.

EFIMOV, A. E. (1957). **[Changes in the sympathetic ganglia in Johne's disease of cattle.]** —*Trud. Omsk vet. Inst.* **15,** 43-52. [In Russian.] **1675**

Degenerative lesions were found in the intramural ganglia of the intestine and in the superior cervical, stellate and coeliac ganglia of 7 cows with advanced Johne's disease, but the lesions were not considered to be specific for this disease.—R.M.

I. COLLING, M., NIGG, C. & HECKLY, R. J. (1958). **Toxins of *Pseudomonas pseudomallei*. I. Production** *in vitro*. — *J. Bact.* **76,** 422-426. **1676**

II. HECKLY, R. J. & NIGG, C. (1958). **Toxins of *Pseudomonas pseudomallei*. II. Characterization.**—*Ibid.* 427-436. [Authors' summaries modified.] **1677**

I. Selected strains of *Pseudomonas pseudomallei* [*Pfeifferella whitmori*] produced a thermolabile lethal toxin *in vitro*. Maximal yields were obtained by incorporating glycerin, heart infusion broth and hog gastric mucin into a broth medium and by incubating the cultures at 32°C. for 7 to 10 days. The active factor in mucin was non-dialysable and precipitable by ethanol. The conditions which apparently limit continued toxin production in older cultures were discussed. Toxigenicity was apparently not correlated with virulence or colonial morphology.

II. Two thermolabile exotoxins were demonstrated in crude filtrates of the organism by selective adsorption and elution from a synthetic non-ionic resin. One toxin was lethal for mice and caused necrosis, whereas the other was lethal but did not cause necrosis. Lethal toxin was immunogenic. Neither toxin was inactivated by acetone or alcohol, but both were detoxified by phenol or formaldehyde. Both toxins were precipitated by ammonium sulphate at a final conc. of 35% and were most stable between pH 6 and 9.

LEVINE, H. B. & MAURER, R. L. (1958). **Immunization with an induced avirulent auxotrophic mutant of *Pseudomonas pseudomallei*.** —*J. Immunol.* **81,** 433-438. [Authors' summary modified.] **1678**

A virulent strain of *Ps. pseudomallei* [*Pf. whitmori*] was subjected to ultra-violet irradiation and a mutant clone requiring preformed adenine or hypoxanthine for growth was isolated. The imposition of auxotrophism was associated with a striking decline in virulence for mice which could be restored by permitting the strain to revert to purine independence *in vitro*. The mutant persisted in mice without detected reversions or untoward effects for about 20 days after inoculation of 10^7 organisms. After repeated inoculations, a significant immune response was demonstrated by parenteral challenge with diverse strains of this species. However, animals so immunized remained susceptible to lethal respiratory infection.

HEZEBICKS, M. M. & NIGG, C. (1958). **Chemotherapy of experimental melioidosis in mice.** —*Antibiot. & Chemother.* **8,** 543-560. [Summary in Spanish p. 595. Authors' summary modified.] **1679**

Oral chloramphenicol and subcutaneous chlortetracycline administered over 15 days cured from 70 to 100% of mice infected with 330 to 470 LD_{50} of *Pf. whitmori*; other tetracyclines appeared to have only suppressive activity. Sulphonamides, with and without alumina gel, and novobiocin cured from 20 to 40% when administered orally for only five days. Fifteen days' oral therapy with either the triple sulphonamides or sulphadiazine alone cured 90 to 100% of mice infected intraperitoneally, while subcutaneous sulphadiazine cured only 10 to 40%.

Chloramphenicol and the sulphonamides were also effective orally in aerosol infections with the same strain, but s/c chlortetracycline was only suppressive in contrast to its good therapeutic action by this route in intraperitoneal infections.

HEUNER, F. (1958). Über serologische Untersuchungen an Rotlaufstämmen. [**Serological studies on strains of** *E. rhusiopathiae.*]— *Arch. exp. VetMed.* **12,** 40-61. **1680**

Of 147 *Erysipelothrix rhusiopathiae* strains grouped by precipitation with acid-soluble antigenic extracts from washed bacteria, 107 belonged to Group A (100 to A1 and 7 to A2), 28 to Group B (25 to B1, 3 to B2), one to Group C, and two to Group D. Nine, belonging to neither of these groups, formed Group N. Precipitation was regarded as more reliable than agglutination. A1-specific phages inhibited 11 of 18 A1 strains.—E.G.

ANDO, K. & NAKAMURA, H. (1958). [**Supplementary studies on swine erysipelas living vaccine. II. Experiments on lyophilization of the vaccine.**] — *Bull. Nat. Inst. Anim. Hlth, Tokyo* No. 34, pp. 1-10. [In Japanese. Summary in English.] **1681**

Bacterial survival rates of at least 50% after 6 months' storage in a refrigerator could be obtained with swine erysipelas living vaccine freeze-dried in a Stoker chamber-type drier. Vials containing 1 ml. of a 20-hour culture of an acriflavine-adapted Koganei strain of *Erysipelothrix rhusiopathiae* in broth containing 3% Difco bacto peptone and 0·1% Tween 80 together with 5% of dried skim milk added to an equal volume of 10% dried yeast extract were initially frozen at −35°C. and then dried under vacuum for 16 hours. 1 ml. of the original suspension contained 2–5 thousand million organisms.

—A. ACKROYD.

HRUŠKA, K. (1958). Červenka vepřů. Nový způsob levné výroby očkovací látky proti této nakažlivé nemoci. (V. Sdělení.) [**Swine erysipelas. New method of vaccine production.**] — *Sborn. čes. Akad. zemědělsk. Věd.* **3 (31),** 763-778. [In Czech. Summaries in French and Russian.] **1682**

Very satisfactory immunity was obtained in a field experiment with a vaccine prepared from 72-hour *E. rhusiopathiae* culture by fermentation, hydrolysis and aluminium hydroxide adsorption. Thiomersal was added as a preservative. No details are given of the fermentation process. [*See V.B.* **21,** 2826 and **22,** 649, on the use of a fermented antigen in TB.] Titration experiments were carried out in 186 pigs and several hundred pigeons. Details were also given of results obtained with brilliant green and crystal-violet swine erysipelas vaccines [*V.B.* **25,** 2676].—E.G.

WATSON, W. A. & HUNTER, D. (1958). **Listeria infection in a lamb.** — *Vet. Rec.* **70,** 1189. [Authors' summary modified.] **1683**

Erysipelothrix (*Listeria*) *monocytogenes* was isolated from the liver of a lamb. The lesions in the liver were typical of this condition. The disease affecting the flock is described.

HAQ, M. M. & QUADER, M. A. (1957). **Studies on immunisation against haemorrhagic septicaemia.** — *Proc. 9th Pakistan Sci. Conf., Peshawar* 1957. Part III. pp. 130-131. **1684**

Further studies on different types of vaccine indicated that the most satisfactory was one consisting of equal parts of sero-fibrinous fluid from local oedematous lesions of animals experimentally infected with *Past. septica,* and a washed suspension of a 24-hour agar culture, inactivated by the addition of 0·5% formaldehyde. It protected all of 38 cattle for at least 9 months. [See also *V.B.* **26,** 22].—R.M.

BIBERSTEIN, E. L., MEYER, M. E. & KENNEDY, P. C. (1958). **Colonial variation of *Pasteurella haemolytica* isolated from sheep.**—*J. Bact.* **76,** 445-452. [Authors' summary modified.] **1685**

Two types of the organism distinguishable by colonial characteristics, crystal violet uptake, and serological properties, have been recovered from an outbreak of septicaemia in a flock of lambs. They are stable in culture and differ in

degrees of pathogenicity for mice. A difference between them consists of a surface antigen, abundant in the S type and deficient in the R type of cell.

KENNEDY, P. C., FRAZIER, L. M., THEILEN, G. H. & BIBERSTEIN, E. L. (1958). **A septicemic disease of lambs caused by *Hemophilus agni* (new species).** — *Amer. J. vet. Res.* **19,** 645-654. **1686**

Over a three month period in the summer of 1957, a septicaemic disease occurred in lambs of a breeding flock. Except for a few which appeared to respond to streptomycin, all affected animals died, the final mortality being 20%. Clinical signs were minimal and most lambs were found dead; in a few cases, stiffness, depression and fever were noticed. Gross lesions consisted of multiple subcutaneous, subserosal and muscular haemorrhages and focal hepatic necrosis due to bacterial thrombi. Arthritis developed in those that survived 24 hours or more. A Gram-negative, non-motile, non spore-bearing, aerobic bacillus was recovered from most organs and tissues. It required media enriched with blood or tissue fragments and grew best in an atmosphere of 10% CO_2. Experimentally it was pathogenic only for lambs and only when injected parenterally. Direct transmission from lamb to lamb was not observed. The name *Haemophilus agni* n.sp. has been proposed.—A. ACKROYD.

HESS, E. & SUTER, P. (1958). Die Ödemkrankheit des Schweines. [**Oedema disease of pigs.**]—*Schweiz. Arch. Tierheilk.* **100,** 653-664. [Summaries in English, French and Italian. English summary modified.] **1687**

In 65 cases of oedema disease in pigs haemolytic *E. coli* were isolated either alone or predominantly from the intestine, also from the mesenteric lymph nodes and, in one case, from parenchymatous organs. The two most frequent types had the antigenic formula 139 : K82 (B) : H_1 and 121 : K : H_{10}.

Oral application of dense suspensions of both these types was regularly followed by invasion and proliferation of the bacteria in the intestine, but not by intoxication. The stressors causing the syndrome are still unknown. Preliminary results of specific serum treatment and preventive active immunization with the two most frequent serotypes of *E. coli* are described.

KELEN, A. E., CAMPBELL, S. G. & BARNUM, D. A. (1959). **Studies on haemolytic Escherichia coli strains associated with oedema disease (E. coli toxaemia) of swine.** —*Canad. J. publ. Hlth* **50,** 27. [Authors' abst. modified.] **1688**

None of the strains examined were identical with any of the serotypes associated with infantile diarrhoea. Most belonged to three distinct serotypes, two of which were identical with serotypes encountered in the U.S.A., the U.K. and Ireland. Although the third Canadian serotype and a third British serotype (OKE 68) had a common O antigen, the Canadian type had a different and apparently new K(B) antigen. All these strains were highly sensitive to chloramphenicol, streptomycin, polymyxin B, neomycin and furadantin.

LANDY, M., TRAPANI, R.-J. & SHEAR, M. J. (1958). **Interference by endotoxic polysaccharides with inactivation of coliphage by human serum.**—*Brit. J. exp. Path.* **39,** 618-630. [Authors' summary.] **1689**

The inactivation of coliphage $T2r^+$ by the properdin system in human serum may be counteracted by microgram levels of those polysaccharides which elicit endotoxic reactions in the mammalian host. Factors influencing this interaction of polysaccharide and properdin *in vitro* were examined. Under appropriate conditions of test, the antiviral action of properdin was annulled by polysaccharide as a linear function of dose. The activity of a large proportion of the polysaccharide complexes (endotoxins) derived from Gram-negative bacteria, higher plants, and mammalian tissues, was such that it could be readily measured with this procedure in a range of 1 to 30 μg.

GRAY, D. F., LEWIS, P. F. & GORRIE, C. J. R. (1958). **Bonemeal as a source of bovine salmonellosis.** — *Aust. vet. J.* **34,** 345-351. **1690**

An outbreak of salmonellosis involving nine dairy herds is reported. The source of infection was shown to be contaminated bonemeal.

Six *Salmonella* species were isolated from cattle and eleven from bonemeal. The investigation, epidemiology, and control are described.

The most successful treatment of affected animals was 1 g. oxytetracycline twice a day. The outbreak was controlled by using a formalin killed vaccine and by withdrawing foodstuffs containing bonemeal.

The public health aspects and the need for complete bacteriological studies in such outbreaks are stressed.—L. LLOYD.

CZARNOWSKI, A. (1958). Ronienia u lisów wywołane przez pałeczki *S. choleraesuis*. [**Abortion in foxes caused by *Salmonella cholerae-suis*.**]—*Méd. vét., Varsovie* **14,** 459-460. [In Polish.] **1691**

An account of an outbreak in which 16 of

80 pregnant vixens aborted. An infectious agent was not suspected until 11 abortions had occurred. The lesions in foetuses consisted of subcutaneous and subserous haemorrhages and extensive areas of necrosis in the placentas. *Salmonella cholerae-suis* was recovered from the foetuses and placentas but not from the blood of the vixens whose sera agglutinated a suspension of *S. cholerae-suis* to the titre of 1:160. All pregnant vixens were given 250 mg. chloramphenicol daily for 7 days and no further abortions occurred.—M. GITTER.

PALATKA, Z. (1958). Kísérletek a naposcsibék baromfityphusának megelőzésére és gyógyítására biomycinnel. **[Prophylaxis and treatment of pullorum disease in day-old chicks with biomycin.]** — *Mag. állator. Lapja* **13,** 226-229. **1692**

A death rate of 20–31% was observed in a a group of 200 day-old Leghorn chicks in which treatment with 10 daily injections of biomycin (chlortetracycline) in doses of 100,000 μg./kg. body wt. commenced within 24 hours after artificial infection with *Salmonella pullorum*. However, the death rate remained between 47·5 to 100% in groups of 200 chicks which received the same treatment commencing 72 hours or more after infection, or else received only 50,000 μg./kg. in each dose. After administration of 30 daily doses of 1,000 μg. biomycin per chick as prophylactic to 600 day-old Leghorn chicks, *S. pullorum* infection was detected in 59 dead and 89 living chicks and a beneficial effect in the growth rate and food conversion rate was observed, in contrast with a group of 600 untreated chicks, in which *S. pullorum* infection was detected in 160 dead and 182 living chicks. *S. pullorum* strains isolated from carcasses of biomycin treated chicks showed a moderate degree of resistance against biomycin *in vitro*. P. suggests that the extensive use of biomycin in the doses quoted could decrease the mortality rate and the number of chronic carriers of pullorum disease.—A. SEBESTENY.

STOKES, J. L. & BAYNE, H. G. (1958). **Growth-factor-dependent strains of Salmonellae.**—*J. Bact.* **76,** 417-421. [Authors' summary modified.] **1693**

Growth factors required by strains of *Salmonella typhi-suis, abortus-ovis, fulica, paratyphi A, pullorum,* and *gallinarum* include the the vitamins thiamine and nicotinic acid, the purines adenine and guanine, and the amino-acids cystine, methionine, leucine, threonine, histidine, arginine, and aspartic acid.

BECHT, H. (1958). Die indirekte Hämagglutinationsreaktion zur Feststellung der Brucellose. **[The indirect haemagglutination test for the detection of brucellosis.]** — *Zbl. VetMed.* **5,** 909-936. [Summaries in English, French and Spanish. English summary modified.] **1694**

By extraction with acetic acid at 100°C., followed by precipitation by alcohol, a substance can be demonstrated in *Br. abortus* which can sensitize cattle r.b.c. Cattle r.b.c. modified in this way are specifically agglutinated by sera from cattle with brucellosis. This indirect haemagglutination test may be valuable in the case of sera which react doubtfully in the slow agglutination test. Further studies on sheep sera will be made.

ANCZYKOWSKI, F. (1958). W sprawie standaryzacji barwionej zawiesiny *Br. abortus* do aglutynacji. II. Namnazanie szczépu a wiek hodowli. **[Standardization of stained *Brucella abortus* suspensions for agglutination. II. Age of culture.]** — *Méd. vét., Varsovie* **14,** 461-462. [In Polish.] **1695**

The cultures were grown on potato agar, washed off with a buffer solution and stained with 2, 3, 5 triphenyl tetrazolium chloride (the author's modification of Bendtsen's method). The density of the suspension was determined by centrifugation in Hopkins-Fitch tubes. Although a 96-hour culture gave the maximum growth the suspension could not be uniformly stained. The 72-hour culture, which gave a well stained suspension, was chosen as the most economical for standardization of *Br. abortus* suspensions for agglutination.—M. GITTER.

JANNEY, G. C., BERMAN, D. T. & ERDMANN, A. A. (1958). **The relative efficiency of the milk ring test and area blood tests for bovine brucellosis.** — *J. Amer. vet. med. Ass.* **133,** 586-589. **1696**

In two modified certified brucellosis-free areas, a study was conducted to determine the efficiency of half-yearly milk ring tests in establishing and maintaining the status. Blood serum agglutination tests were made one week after ring testing on all animals except those vaccinated under 30 months of age, calves under 8 months old, steers and spayed heifers. In one county, 22 (0·066%) reactors were found in 15 (0·99%) of the herds, and in the other, 64 (0·157%) in 39 (1·8%) of the herds. Of those herds containing reactors, 30 had shown suspicious milk ring reactions, 3 had not been tested, whilst the single reactors in 10 were not in milk at the time of the ring testing. Only 10

herds, each with one reactor, were falsely negative to the ring test; of these 10 reactors, 9 were negative on culture and 6 were negative to the whey test. The whey test failed to identify 19 blood reactors, 3 of which were found to have brucella infection of the udder.—A. ACKROYD.

KARÁSEK, J. (1958). Přenosnost brucel komáry. **[Mosquitoes as transmitters of brucellosis.]** —*Sborn. čes. Akad. zemědělsk. Věd.* **3 (31),** 13-32. [In Czech. Summaries in French, German and Russian.] **1697**

Viable brucella organisms were demonstrated on the body surface of *Culex pipiens* up to 36 hours, in the digestive tract up to 72 hours and in faeces up to 48 hours after ingestion of experimentally infected blood. Brucella was not demonstrable in 400 mosquitoes trapped in a byre housing an infected herd, where there were no abortions at that time. The possible role of mosquitoes as carriers was discussed.—E.G.

SMUTNÝ, L. (1958). Šíření brucel organismem kočky. **[Cats as carriers of brucellosis.]** —*Sborn. čes. Akad. zemědělsk. Věd.* **3 (31),** 243-252. [In Czech. Summaries in German and Russian.] **1698**

The role of cats as carriers of brucellosis was studied by feeding ten cats virulent 48-hour culture, suspended in milk. All reacted with an increase in the agglutination titre and by faecal excretion of viable brucella from 3–6, rarely after 9–12, and never 15 days after ingestion. Transmission to 3 of 5 normal g.pigs kept together with 5 infected cats was demonstrated by increased agglutination titres.—E.G.

SPINK, W. W. & ANDERSON, D. (1958). **Influence of cortisone on infection in mice caused by Strain 19 *Brucella abortus*.** — *Proc. Soc. exp. Biol., N.Y.* **99,** 470-471. **1699**

Administration of cortisone to mice enhanced infection due to *Br. abortus* Strain 19, judged by the number of organisms recovered P.M. from various organs. However, hepatic abscesses, which occur when virulent *Br. abortus* is injected into mice receiving cortisone, did not occur.—W. J. BRINLEY MORGAN.

BEKIERKUNST, A. & SULITZEANU, D. (1958). **Induced resistance of mice to infection with *Brucella abortus* 2308 through vaccination with BCG.** — *Nature, Lond.* **182,** 883-884. **1700**

In mice vaccinated intra-abdominally with living B.C.G. and challenged after 2–6 weeks with virulent *Br. abortus*, the number of brucella organisms in the spleen 7 days later was 25 to 300 times less than in controls. That living B.C.G. organisms have an immunizing effect against brucella was confirmed by the finding of considerably less radioactivity in the spleen of B.C.G. immunized mice than of controls after inoculation of killed radio-iodinated brucella. Killed B.C.G. had considerably less immunizing effect.—A. ACKROYD.

SPINK, W. W. & ANDERSON, D. (1958). **Infection of mice with G variants (micro-colonies) of *Brucella abortus*.**—*Proc. Soc. exp. Biol., N.Y.* **99,** 466-470. **1701**

G variant (or micro-colony) types were isolated from 11 of 14 CO_2-requiring cultures of *Br. abortus* by inoculating tryptose agar plates with heavy suspensions and incubating for 12 days in air. Subcultures could be made on tryptose agar but not on Albimi agar and they survived but did not multiply in tryptose broth. G variants could not be isolated on media containing antibiotics. G variants always reverted to the parent (large colony) type when grown in CO_2 and this occasionally occurred under aerobic incubation. Apart from their small size (0·1 mm. diam.) the G variants resembled their parent cultures in morphology and staining reactions and agglutination with *Br. abortus* antisera, but were more sensitive to basic fuchsin and slightly more resistant to streptomycin and oxytetracycline. Whereas mice inoculated with the parent cultures died after 3 weeks, those inoculated with the G variants showed no ill effect. G colonies could be recovered from mice 3 weeks and 2 months but not 5 and 7 months after inoculation.

The primary isolation of G variants has been reported from an aborted foetus and from human blood and it is suggested that a more intensive search should be made for them.

—W. J. BRINLEY MORGAN.

CONDE, E., POMALES-LEBRÓN, A. & CANCIO, M. (1958). **Fractionation of sera from guinea pigs at different stages of *Brucella abortus* infection.**—*Proc. Soc. exp. Biol., N.Y.* **99,** 640-642. [Authors' summary modified.] **1702**

New serum components were not detected in infected g.pigs. Significant increase in the gamma-globulin fraction was observed 3–4 months after infection. The rise in gamma-globulin coincided with the highest agglutinin titres in sera of infected g.pigs during 12 months of observation. Absorption studies are being carried out to determine if the gamma-globulin rise is due mainly to antibody formation.

HELLMANN, E. & FRÜHWALD, E. (1958). Untersuchungen über das Verhalten der humoralen Antikörper Serumglobuline und Opsonine

beim Meerschweinchen nach Immunisierung gegen Brucellose. **[Studies on the behaviour of humoral antibodies, serum globulins and opsonins in the guinea-pig after immunization against brucellosis.]**—*Zbl. VetMed.* **5**, 937-952. [Summaries in English, French and Spanish. English summary modified.] **1703**

The immunizing ability of an ultrasonic extract of *Br. abortus* Strain 19 adsorbed on to aluminium hydroxide was compared with that of the live strain. The live strain gave good protection, whereas the adsorbed vaccine gave very little.

Injection of live Strain 19 as well as inoculation of virulent *Br. abortus* was followed by a rise in gamma globulin, associated with the production of humoral antibodies. Challenge infection produced a greater rise in gamma globulin in susceptible animals than in animals protected by vaccination. The rise in gamma globulin was very nearly proportional to the degree of infection. The relationship between the level of antibodies (agglutination titre) and the rise of gamma globulin was almost the same in immunized animals as in infected ones. The opsonic index calculated by Huddleson's method reached higher levels after vaccination than after infection of non-vaccinated animals. The adsorbate vaccine which produced such a poor immune response caused an increase in phagocytosis as great as that produced by the live vaccine.

Held, J. R., Bauer, H. & West, R. L. (1958). **Effect of eradicating brucellosis in cattle on incidence of human cases.**—*Publ. Hlth Rep., Wash.* **73**, 1096-1100. [Authors' summary modified.] **1704**

Coincident with progress in the eradication of brucellosis in cattle, there has been a significant reduction in human cases. From 1950 to 1956 the number of human cases in Minnesota has declined markedly despite a high increase in the cattle population. Since 1940, when the first counties were certified as brucellosis free, the human case rate for brucellosis has been 3·12 times greater in non-certified areas than in certified areas.

Sofronov, N. V. & Novaev, N. N. (1958). **[Trial of Strain 19 brucella vaccine in sheep.]** —*Veterinariya, Moscow* **35**, No. 10. pp. 28-31. [In Russian.] **1705**

Vaccination with Strain 19 over a period of 2 years reduced the number of abortions in 3 flocks, each of about 600 sheep, but did not eradicate brucellosis. Culture of foetuses and milk from aborting ewes yielded *Br. melitensis*. On no occasion was the vaccinal strain recovered.—E. L. Urch.

I. Keogh, J., Doolette, J. B. & Clapp, K. H. (1958). **The epidemiology of ovine brucellosis in South Australia.** —*Aust. vet. J.* **34**, 412-417. **1706**

II. Snowdon, W. A. (1958). **Opening of discussion [on paper by J. Keogh *et al.*].**—*Ibid.* 417-422. **1707**

I. The authors report the progress of investigations into ovine brucellosis in South Australia.

The disease primarily affects rams and produces an epididymitis which is detectable clinically and which reduces fertility .

Evidence suggests that *Brucella ovis* might be incriminated in late abortions, but the ewe is relatively unimportant in the spread of infection.

Observations on methods of transmission of infection in rams are reported.

II. Research into bovine brucellosis in Victoria is reported. It is stated that it is primarily a disease of rams with little proven effect on ewes.

The mode of transmission is unknown but there is a strong suggestion that it is due to homosexual practices by young rams.

Promising control measures are based on two complement-fixation tests and isolation of young rams; the testing of older rams and culling of reactors.—L. Lloyd.

Wilson, M. M., Simmons, R. T. & Semple, N. M. (1958). **The host lability of the anti-human globulin in Coombs reagent used to detect incomplete brucella human antibody.** —*Aust. J. Sci.* **20**, 275-276. **1708**

Heated rabbit anti-globulin serum was found unsuitable for detecting incomplete antibody to brucella in human sera. Heated rabbit sera, however, still agglutinated Rh sensitized r.b.c., suggesting that incomplete Rh antibodies and incomplete brucella antibodies are not as similar as originally thought.—R. Bain.

Parnas, J., Feltynowski, A. & Bulikowski, W. (1958). **Anti-*Brucella brucei* phage.**— *Bull. Acad. polon. Sci., Ser. biol.* **6**, 201-203. [In English.] **1709**

The "Tbilisi" strain of bacteriophage isolated by Vershilova and Ostrovskaya at the Gameliya Institute in Moscow was studied with regard to morphology (with the aid of the electron microscope), influence on dissociation of brucella, and influence on various types of brucella.

The strain was compared with 14 phages isolated by the authors from stock strains of brucella.—R.M.

CAMERON, H. S. & MEYER, M. E. (1958). **Metabolic studies on *Brucella neotomae* (Stoenner and Lackman).** — *J. Bact.* **76,** 546-548. [Authors' summary modified.] **1710**

The species *Brucella neotomae* was isolated from the wood rat and identified as a new species by Stoenner & Lackman [*V.B.* **28,** 2048]. The observations of these authors were substantiated by manometric techniques in that the oxidative metabolic pattern of the proposed new species is not identical with that of any of the three recognized species.

ROBERTS, S. J. (1958). **A study of leptospirosis in a large artificial insemination stud.** — *Cornell Vet.* **48,** 363-371. **1711**

Sera from cattle in an insemination stud were examined annually for 7 years, initially by the complement-fixation test, later by the agglutination-lysis test. R. draws attention to the limitations of the test and the need for the standardization of method to get reproducible results.

Positive blood titres persisted for up to 7 years although, occasionally, animals with low titres became negative. Since high titres indicate recent infection (when the organism is most likely to be excreted in the urine), it is suggested that, in animals positive to the initial screening test, the titres should be ascertained and, if high (1/10,000 or over) the animal should be regarded as a possible excretor and isolated. Measures to prevent introduction and spread of the disease in a stud are described.

—W. J. BRINLEY MORGAN.

POKORNÝ, B., LEHKÝ, F., ŠEBEK, Z. & VOŠTA, J. (1958). Přírodní ohniska a reservoiry leptospir v kotlině třeboňské v roce 1956. **[Natural foci and reservoirs of leptospirosis in south-eastern Bohemia.]** — *Sborn. čes. Akad. zemědělsk. Věd.* **3 (31),** 263-270. [In Czech. Summaries in German and Russian.] **1712**

The authors examined 636 small wild mammals from the lake district of south-eastern Bohemia. They isolated *Leptospira grippotyphosa* from *Microtus arvalis, M. agrestis, Clethrionomys glareolus, Apodemus sylvaticus, Fiber zibethicus, Arvicola terrestris, Sorex araneus* and *Neomys fodiens*. Specific antibodies to *L. grippo-typhosa* and *L. sejroe* were demonstrated in the blood of human beings in the district.—E.G .

MOUSSA, R. S. (1958). **Complexity of toxins from *Clostridium septicum* and *Clostridium chauvoei*.**—*J. Bact.* **76,** 538-545. [Author's summary modified.] **1713**

Cl. septicum and *Cl. chauvoei* produce more than one toxic substance. The lethal, necrotic, oxygen-stable haemolysin (α-toxin) of *Cl. septicum* is specific for this organism; it is neutralized by homologous antisera, but not by antisera of *Cl. chauvoei* or by normal sera.

The deoxyribonucleases of *Cl. septicum* and *Cl. chauvoei* (β-toxin) were found distinct from the α-toxins, and from the hyaluronidases (γ-toxins) of these organisms. At least 2 deoxyribonucleases and hyaluronidases are shared by their filtrates.

The oxygen-labile haemolysins (δ-toxins) are similarly related but are not identical. They are readily produced by most strains and are reversibly inactivated by oxidation and reactivated by reduction. They are neutralized by anti-streptolysin-O as well as by normal sera.

SCHEIBEL, I. & LENNERT-PETERSEN, O. (1958). **Effect of antibiotics on germinating spores of Cl. tetani in vitro and in vivo.**—*Acta path. microbiol. scand.* **44,** 222-238. [In English. Authors' summary modified.] **1714**

The toxigenicity of the bacterial cells was not impaired by prolonged contact with growth inhibitory concentrations of antibiotics.

There was no effect whatsoever on resting spores.

Oxytetracycline protected mice against heavy infection with spores of *Cl. tetani* in $CaCl_2$ solution by killing the organisms at the site of injection within 2 days, whereas the organism persisted for up to 24 days in mice protected by tetanus antitoxin.

Because of the possible occurrence of resistant strains, caution should be adopted before using antibiotics instead of antitoxin in passive prophylaxis.

DUKALOV, I. A. & GOLOSNITSKII, A. K. (1958). **[Diagnosis of botulism in the living animal.]** —*J. Microbiol., Moscow* **29,** No. 12. pp. 43-46. [In Russian.] **1715**

Attempts to demonstrate botulinum toxin by chemical tests failed but preliminary tests showed that the presence of toxin in horse blood reduced the phagocytosis of staphylococci by about half. Toxin prepared from cultures of *Cl. botulinum* Type B was administered by stomach tube to 4 horses in a single dose of from 1 to 8 ml. (each ml. contained 100,000 lethal doses for mice). One horse died 45 hours after receiving 4 ml. of toxin and another died 56

hours after 8 ml. The other two horses remained alive and were later slaughtered. A fall in phagocytic activity was found in blood collected about 5 hours after administration of toxin, but not in blood collected after 24 hours, although blood was lethal for g.pigs at both times. Toxin could be demonstrated in g.pigs only when they were inoculated with blood soon after its collection.—R.M.

McEntee, K., Hughes, D. E. & Wagner, W. C. (1959). **Failure to produce vibriosis in cattle by vulvar exposure.** — *Cornell Vet.* **49,** 34-40. [Authors' discussion and summary modified.] **1716**

Although Plastridge *et al.* [*V.B.* **26,** 1561] reported contact spread of vibriosis and the development of infection following vulvar exposure, the present authors had not observed contact spread and failed to produce infection by vulvar exposure. They believe that the method used in this experiment subjects heifers to a more drastic exposure to *V. fetus* than would occur naturally. The heifers were repeatedly exposed to extremely large numbers of organisms at various times during the oestrous cycle, and were subsequently challenged by intra-uterine inj. of *V. fetus*. Seven of the eight heifers developed vibriosis. From the results of this experiment it appears that the chances of vibriosis spreading by contact are remote.

Dennis, S. M. (1959). **Isolation of a lipopolysaccharide from *Vibrio fetus*.—*Nature, Lond.* 183,** 186. **1717**

A lipopolysaccharide which was toxic, pyrogenic and antigenic could be extracted from both smooth and rough cells of *V. fetus*, using potassium thiocyanate. Pre-heating to 80°C. for 5 min. greatly increased its toxicity and pyrogenicity, especially in rabbits, which were more susceptible than mice. The lipopolysaccharide, adsorbed to human r.b.c., could be used for haemagglutination tests or, alone, in the complement-fixation test, using rabbit antisera in both cases.—W. J. Brinley Morgan.

Mika, L. A., Pollok, N. L., Schneider, L. E. & Pirsch, J. B. (1958). **Studies on mixed infections. III. Influence of immunological factors in combined *Brucella suis* and *Coxiella burnetii* infection.** — *J. Bact.* **76,** 437-441. [Authors' summary modified.] **1718**

Guinea-pigs actively or passively immunized against *Br. suis* were as susceptible to a *Coxiella burnetii* [*Rickettsia burneti*] infection as normal animals. The challenge of brucella-immunized g.pigs with *Br. suis* and their superinfection 14 days later with *R. burneti* confirmed previous observations that an active bacterial infection had to be established before the interference phenomenon occurred. [See also *V.B.* **25,** 1752.]

Vereninova, N. K., Smirnova, E. I., Kalacheva, N. F., Kuznetsova, N. I. & Karaseva, Z. N. (1958). **[Efficacy of combined vaccination with live vaccines against plague, tularaemia, brucellosis and anthrax.]** — *J. Microbiol., Moscow* **29,** No. 11. pp. 45-52. [In Russian.] **1719**

Inoculations of g.pigs with a combination of live vaccines against plague, tularaemia, brucellosis and anthrax provided sufficiently strong immunity against plague (500 m.l.d.), tularaemia (1,000 m.l.d.) and brucellosis (2 "infective units"): the immunity did not differ from that produced by each vaccine, administered alone. The immunizing properties of anthrax vaccine, however, appeared to be depressed by the other 3 vaccines, and this resulted in inadequate protection against anthrax, whether the vaccines were administered s/c or by cutaneous scarification. This difficulty was overcome by inoculating the anthrax vaccine 10 days before inoculation with a combination of the 3 other vaccines. This procedure was harmless for g.pigs. [The nature of the vaccines was not stated, but presumably they were live vaccines in current use in the U.S.S.R.].—R.M.

van Marwyck, C. (1958). Inkomplette Antikörper bei Infektionskrankheiten. **[Incomplete antibodies in infectious diseases.]**—*Zbl. Bakt. I. (Orig.)* **173,** 116-123. [Summaries in English, French, Spanish and Russian. English summary modified.] **1720**

Serological investigations with antigens of salmonella, pasteurella and brucella using the agglutination, blocking and Coombs tests had the following results. Incomplete antibodies can be demonstrated frequently when complete antibodies are present. In specific diseases with low agglutinin titres incomplete antibodies may be found, frequently showing titres 1 to 5 times higher.

The question whether the production of incomplete antibodies is a precursor reaction cannot be answered, but the results of vaccination point in this direction.

Incomplete antibodies may give cross reactions with other types or groups of the same genus. Blocking and Coombs tests seem to show generic rather than group or type specificity.

DUBOS, R. J. & SCHAEDLER, R. W. (1958). **Effect of dietary proteins and amino acids on the susceptibility of mice to bacterial infections.**—*J. exp. Med.* **108,** 69-81. **1721**

Young mice were fed on pellets containing (a) a minimum of 21% crude protein; (b) 20% casein; (c) 8% casein; and (d) 8% casein plus 12% of a mixture of essential amino-acids. The groups were compared with regard to rate of weight gain, and resistance to experimental i/v infections with *Staphylococcus aureus*, *Mycobacterium fortuitum*, and *M. tuberculosis* (bovine type). Mice on diet (c) were more susceptible than those on diet (b). Mice on diet (a) constantly died faster following infection than those on diets (b) or (c), suggesting that qualitative characteristics of the protein are as important as quantity when determining susceptibility to infection. Mice on diet (d) proved the most resistant, and the differences in susceptibility on all four diets were the same irrespective of the bacterial pathogen used. There was no apparent difference between the effects of diet on weight curve and on resistance to infection.

—S. S. PAPWORTH.

LESTER, G. & HECHTER, O. (1958). **Effect of deoxycorticosterone on the growth of micro-organisms.**—*J. Bact.* **76,** 365-367. **1722**

Deoxycortone inhibited growth of the Gram-positive bacteria, yeasts, and moulds tested when added to culture media in concentrations of from 0·08 to 0·25 mg./ml. Gram-negative bacteria were generally insensitive to deoxycortone.—R.M.

DI MENNA, M. (1958). *Torulopsis ingeniosa* **n. sp., from grass leaves.**—*J. gen. Microbiol.* **19,** 581-583. [Author's summary.] **1723**

An undescribed species of *Torulopsis* has been isolated from pasture grass leaves. It does not ferment sugars and assimilates glucose, sucrose, maltose, lactose, galactose and potassium nitrate. It is distinguished from *Torulopsis aeria* by the oval shape of its cells, mucoid cultures on solid media, and the ability to liquefy gelatin rapidly. It is proposed to name it *T. ingeniosa*.

ROSENTHAL, S. A. & FURNARI, D. (1958). **Slide agglutination as a presumptive test in the laboratory diagnosis of** *Candida albicans*.—*J. Invest. Derm.* **31,** 251-253. **1724**

The slide agglutination test using adsorbed anti-*Candida albicans* serum is suggested as a rapid and convenient method for the provisional diagnosis of *C. albicans* isolated from clin. material.

COZAD, G. C. (1958). **A study of the whole yeast cell agglutination test in rabbits experimentally infected with** *Histoplasma capsulatum*.—*J. Immunol.* **81,** 368-375. [Abst. from author's summary.] **1725**

It was found that whole yeast cells of *H. capsulatum* grown on brain heart infusion agar at 37°C. could be used as antigen in a tube agglutination test with sera from rabbits experimentally infected with *H. capsulatum*. A macroscopic slide agglutination test is described which proved of value in "screening" rabbit sera for antibodies against yeast cells of *H. capsulatum*.

WOLF, G. F., SCHWARTZMAN, R. M. & SAUTTER, J. H. (1958). **Blastomycosis in the dog. Two cases with ocular manifestations.**—*Vet. Med.* **53,** 595-600. **1726**

In the systemic form of North American blastomycosis in the dog the lung is probably the primary site of infection. Two cases are described in which the primary lesions were probably not in the lungs. (1) In a 2-year-old bitch the course of the disease was 4 months as opposed to the usual several weeks. There was protrusion of one eye, and later a persistent cough. Serological, skin and other tests were negative and attempted treatment unsuccessful. X-ray pictures suggested a neoplastic condition of the frontal sinus and lungs and only P.M. histopathology revealed blastomycetes in both masses. (2) In a 5-year-old bitch, blind in both eyes for a week before consultation, bilateral posterior synechia was operated on by transfixation and, although the eyes improved, general condition deteriorated and 2 weeks after operation the dog was destroyed. The complete necropsy report was not available, but a detailed histopathological report on the eyes mentioned complete destruction of the normal eye architecture and the presence of blastomycetes near the optic nerve and papilla.—IRENE M. DIXON.

VAN UDEN, N., DO CARMO SOUSA, L. & FARINHA, M. (1958). **On the intestinal yeast flora of horses, sheep, goats and swine.**—*J. gen. Microbiol.* **19,** 435-445. [Authors' summary modified.] **1727**

From the caeca of 252 horses, 503 sheep, 250 goats and 250 pigs in Portugal, 486 yeast strains belonging to 28 species and 1 variety were isolated. The distribution of yeasts and of *Candida albicans* respectively was: horses, 52·4%, 4·4%; sheep, 6·8%, 4·2%; goats, 6·4%, 0·8%; pigs, 88·8%, 9·2%. The suitability of the sheep and goats as hosts for yeasts seems very limited.

The most frequent occurrences were: *Candida slooffi* in pigs (48·4%). *Trichosporon cutaneum* in horses (21·8%) and *Saccharomyces tellustris* (*Candida bovina*) in swine (14%).

One isolate of *Cryptococcus neoformans* was obtained from a healthy horse, suggesting that horses might sometimes contribute to the dispersal of this pathogen.

GOLDING, N. K. (1958). **The application of the complement fixation test to the control of contagious pleuropneumonia of bovines.**—*Aust. vet. J.* **34**, 361-366. Discussion: pp. 366-369. **1728**

G. described a rapid method of bleeding from the tail and the collection and despatch of samples. He described the c.f. test and its interpretation. The main value of the test is that it detects carrier animals which, if undetected, may subsequently infect numbers of healthy cattle. Problems associated with the control of the disease by the application of the test are discussed.

Opening the discussion on the paper, Grayson outlined the method of control used in Victoria (simultaneous vaccination and bleeding from the tail initially, with regular retesting and surveillance). He contrasted the control measures required in beef and dairy herds. He discussed the possibility of infection by tail inoculation.—L. LLOYD.

FABRICANT, J. (1958). **A reevaluation of the use of media for the isolation of pleuropneumonia-like organisms of avian origin.**—*Avian Diseases* **2**, 409-417. [Author's summary modified.] **1729**

Thirty-three strains of PPLO were re-isolated from 47 yolk cultures that had been frozen at −25°C. for from 6 months to 6½ years. 15 of these strains were C type and 18 were S_6 type. 14 of the 15 C type PPLO were re-isolated in media without embryo passage. Only 7 of the 18 S_6 type strains were re-isolated in media. The other 11 were re-isolated only after embryo passage. In a series of 12 trials in which isolations were attempted from serial dilutions of media-adapted S_6 strains of PPLO, again embryo passage was better than culture for growing and detecting these organisms. In view of the evidence that the S_6 types rather than the C types are the pathogenic strains, these data suggest that present culture media are not satisfactory.

DOMERMUTH, C. H. (1958). *In vitro* **resistance of avian PPLO to antibacterial agents.**—*Avian Diseases* **2**, 442-449. [Author's summary modified.] **1730**

Graded concentrations, 0·1, 1, 10, 100, 1,000 and 10,000 μg./ml. of furazolidone, streptomycin, chloramphenicol and tetracycline were tested for ability to suppress the growth of graded populations of the Winchester strain of PPLO. Suppression of PPLO growth was directly related to the concentrations of chloramphenicol and tetracycline and these suppressed growth at similar rates. Streptomycin and furazolidone exerted similar effects after an initial lag. This strain of PPLO appeared to exhibit a one-step resistance to streptomycin. PPLO had a lag growth phase lasting as long as 28 days. It was possible to subculture the organism after it had been incubated for as long as 57 days.

HOBSON, P. N., MANN, S. O. & OXFORD, A. E. (1958). **Some studies on the occurrence and properties of a large Gram-negative coccus from the rumen.**—*J. gen. Microbiol.* **19**, 462-472. [Authors' summary modified.] **1731**

A large Gram-negative coccus was isolated in a lactate-containing medium from the rumen of young calves. It was anaerobic and fermented only lactate, glucose, fructose, maltose, sucrose, mannitol and sorbitol. The coccus was found in large numbers (about 10^9/ml.) in the rumen contents of young calves, but was present only in small numbers or absent from the rumens of older cattle and sheep. An attempt made to establish the organism in large numbers in a sheep rumen was unsuccessful. The possibility of the coccus being a normal inhabitant of the throat of adult animals was also examined. Five serological types were obtained. The distribution of these types in the same animal over a period, and in different animals, appears to be random. The distribution of a small lactate-fermenting coccus (*Veillonella gazogenes*) is also described.

BRYANT, M. P., SMALL, N., BOUMA, C. & ROBINSON, I. M. (1958). **Characteristics of ruminal anaerobic cellulolytic cocci and** *Cillobacterium cellulosolvens* **n. sp.**—*J. Bact.* **76**, 529-537. [Authors' summary modified.] **1732**

A study was made of the characteristics of 28 strains of cellulolytic cocci isolated from rumen contents of 5 cows fed different rations.

When fermentation products from cellobiose were determined on 14 representative strains, 12 of the cultures were placed in 2 groups. Five strains, placed in the species *Ruminococcus flavefaciens*, formed long chains and produced mainly succinic, acetic and formic acids. Seven

strains, placed in the species *Ruminococcus albus*, usually occurred singly and as diplococci and produced mainly acetic and formic acids, ethanol and, usually, gas that included hydrogen. Two strains producing a large amount of lactic acid did not fit well into either group. There seemed to be no correlation between the characteristics of cellulolytic cocci isolated and the sample of rumen contents from which they were obtained.

Cillobacterium cellulosolvens n. sp. is a new species of anaerobic, cellulolytic, Gram-positive, peritrichous rod with pointed ends that produces predominantly lactic acid in rumen fluid–cellobiose medium. As far as is known, it seems to be relatively unimportant in the rumen.

See also abstr. **1773** (simultaneous listeriosis and swine influenza); **1892** (necrotic hepatitis and latent rickettsiosis, activated by liver fluke, in sheep); **1904** (poisoning in pigs with ustilaginous fungi); **1970** (report, Milk Marketing Board); **1972-1973** (report, Canada); **1974** (report Australia).

DISEASES CAUSED BY PROTOZOAN PARASITES

SMITH, I. M. (1958). **The protection against trypanosomiasis conferred on cattle by repeated doses of antrycide, alone or with *Trypanosoma congolense*.**—*Ann. trop. Med. Parasit.* **52,** 391-401. [Author's summary modified.] **1733**

The interim results are recorded of an attempt to immunize short-horned East African zebu cattle against a strain of *T. congolense*.

Six animals (two of which died before challenge) were inoculated at two-monthly intervals with seven doses of living *T. congolense* and with seven doses of quinapyramine (prophylactic). Another six were injected with the drug only.

Six months after the last dose, the animals were challenged five times at monthly intervals by injection of about 16 ED_{50} of the same strain.

All those which received the dual treatment and four of the six which received the prophylactic alone resisted the test doses, which readily infected control cattle. About 80 days after the fifth challenge, persistent and drug-fast *T. congolense* was found in the peripheral blood of two animals of the group given prophylactic only.

ROBSON, J. & CAWDERY, M. J. H. (1958). **Prophylaxis against trypanosomiasis in Zebu cattle. A comparison of prothidium, the suraminates of ethidium and RD 2902, and antrycide prosalt.** — *Vet. Rec.* **70,** 870-876. [Authors' summary modified.] **1734**

Immature zebu bullocks treated with a single dose of prothidium and the suraminates of ethidium and RD 2902, were compared with similar cattle treated prophylactically with 2-monthly doses of antrycide prosalt and with untreated controls, in an area of high natural challenge.

The apparent density of *G. swynnertoni* was 177, and of *G. pallidipes* was 34, with an infection rate of 2·44% and 3·05% respectively, and it was calculated that 0·071 infected flies would feed on each animal each day.

A single dose of prothidium at 4 mg. per kg. appeared to give the longest prophylactic effect; prothidium at 2 mg. per kg. appeared to be little more effective than a single dose of antrycide prosalt; ethidium suraminate at 5 mg. and 10 mg. per kg., while being slightly more effective as a prophylactic than prothidium at 4 mg. per kg. caused such severe local reactions as to preclude its use, unless its local toxicity can be reduced by improved manufacture. The suraminate of RD 2902 at doses of 10 mg. and 20 mg. per kg. was toxic in use although apparently effective as a prophylactic. Antrycide prosalt used at 2-monthly intervals did not give complete protection.

Local reactions were noted in all treated animals, but were most severe in the groups inoculated with the suraminates.

Forty untreated bullocks, introduced in groups at monthly intervals, all became infected in a mean period of 23·9 days varying from 12 to 69 days.

I. STEPHEN, L. E. (1958). **Suramin complexes. IV. Ethidium bromide complex: a large-scale laboratory trial of its prophylactic activity in cattle.**—*Ann. trop. Med. Parasit.* **52,** 417-426. [Author's summary modified.] **1735**

II. STEPHEN, L. E. & WILLIAMSON, J. (1958). **Suramin complexes. V. Ethidium complex: attempts to overcome the injection-site reaction in cattle.**—*Ibid.* 427-442. [Authors' summary modified.] **1736**

I. An account is given of a trial in 24 zebu cattle of the prophylactic properties of ethidium bromide–suramin complex injected s/c at 10·0, 7·5 and 5·0 mg. per kg.

The drug caused severe swellings at any of the three doses. Some of the swellings burst and most of them sloughed; in both cases most of the drug was lost.

The loss of the drug from the injection site reduced the period of protection to a minimum of four months, even at the highest dose rate.

In two beasts the swelling did not burst or slough; one, in the 10 mg. per kg. group, was protected for 10 months, and the other, dosed at 7·5 mg. per kg., was protected for 16 months.

The drug, when given s/c to adult cattle, did not produce symptoms of general toxicity, even at the 10 mg. per kg. dose. There was a slight loss of weight in the two highest dose-rate groups during the first month only. The average red cell count, haemoglobin value and packed-cell volume in all the treated groups were somewhat lower than in the controls, but anaemia did not develop.

The drug, at all the doses, appeared to have a deleterious effect on calves.

The fly challenge consisted principally of wild *Glossina morsitans*, although moderate numbers of wild *G. longipalpis* from Southern Nigeria were also used. The flies were maintained on heavily infected sheep for 10 or 11 days before challenging the cattle, in order to increase the natural infection rate. Fly dissections revealed a predominantly *Trypanosoma vivax* infection, although *T. congolense* was also well represented.

The trypanosomes which broke through during the trial were mainly *T. congolense*, which suggests that *T. congolense* is more resistant to the complex than *T. vivax*.

II. Experiments were made to investigate possible causes of the local swellings and skin necrosis at the injection site in cattle treated s/c with ethidium–suramin complex.

Considerable hydration of the suramin is shown to be a source of free ethidium bromide in the ethidium–suramin complexes prepared in earlier experiments.

The local reactions did not seem to be associated with the neck site, with small changes in concentration of the complex, or with the presence of free ethidium bromide.

Batch variation of ethidium bromide is unlikely to be a cause, as three batches were chromatographically pure and identical.

There was no difference in the reactions produced by the suramin complexes of either ethidium chloride or ethidium bromide.

Heat treatment of suramin used for complex preparation did not affect the local reactions nor the prophylactic period.

Smaller local swellings were produced after s/c inj. of concentrated complex made with the more soluble ethidium chloride, but skin necrosis was not prevented.

A prior injection of hyaluronidase did not lessen the swelling after s/c inj. in the dewlap, but after seven weeks the swellings were smaller.

I/m inj. produced a negligible local reaction in sheep, and in cattle only one beast out of 33 developed skin necrosis.

Cattle treated i/m nevertheless developed a severe reaction in the muscle tissue at the inj. site, accompanied in a number of cases by loss of weight and death, particularly at the 10 mg. per kg. dose level.

The local reaction after i/m inj. was reduced by the use of a concentrated complex prepared with reconstituted freeze-dried material, but the prophylactic period was considerably lessened.

The remarkable prophylactic activity of the ethidium–suramin complex against trypanosome infections in cattle undoubtedly warrants further investigation of the toxic reactions produced by it. Some possible reasons for the toxicity are discussed.

SMITH, I. M. (1959). **Chemoprophylaxis against bovine trypanosomiasis. I. Duration of protection from Prothidium, and Ethidium and R.D. 2902 suraminates, in an area of high tsetse density.**—*J. comp. Path.* **69**, 105-115. [Author's conclusions modified.] **1737**

Groups of small, short-horned East African zebu cattle injected with Prothidium, the suraminates of Ethidium and R.D. 2902 and standard formulation quinapyramine (prophylactic), were exposed to a high density of *G. pallidipes*. Five and 10 mg./kg. of the suraminate preparations and 4 mg./kg. of Prothidium were superior in protective power to quinapyramine (prophylactic). The latter was possibly not less potent prophylactically than 2 mg./kg. of Prothidium. All the preparations tested induced swellings at the site of injection in the dewlap but the reaction to Prothidium was the least severe. The sex and colour of an animal appeared to play no part in determining the duration of protection.

BAKER, J. R. (1958). **The curative power of 4-(2 : 6-diaminopyrimidine-4-ylamino) phenylarsine oxide (compound 12,065) in infections of *Trypanosoma rhodesiense* in laboratory animals.**—*Brit. J. Pharmacol.* **13**, 436-439. [Author's abst. modified.] **1738**

The toxicity to laboratory animals of compound 12,065 and its ability to cure laboratory infections of *Trypanosoma rhodesiense* were investigated. The intramuscular lethal dose for mice was 22 mg./kg.; rats were more susceptible. Monkeys tolerated two daily doses of 6 mg./kg. but not two daily doses of 10 mg./kg. The intramuscular curative dose for mice was about 6 mg./kg. with two strains of *T. rhodesiense* recently isolated from human patients,

and 2 mg./kg. with a strain of *T. rhodesiense* which had been maintained by cyclical transmission through tsetse flies in the laboratory for about 17 months [see also *V.B.* **29,** 680].

SIMMONS, G. C. & LAWS, L. (1957). **Observations on bovine trichomoniasis.**—*Aust. vet. J.* **33,** 249-252. **1739**

When three virgin heifers were mated to an infected bull (*Tr. foetus* type Belfast), infection persisted for 47, 136 and 163 days respectively. Vaginal mucus was examined microscopically and by culture, the latter method being far more reliable. Oestrus occurred during the infection. The trichomonads were readily isolated at this time. The techniques used are described.

A naturally infected bull was found to harbour *Tr. foetus* for at least two years. Microscopic and cultural examination of preputial material were of about equal value in demonstrating the organisms, but any one sample should be submitted to both examinations and the bull sampled on more than one occasion.

—K. G. JOHNSTON.

FITZGERALD, P. R., JOHNSON, A. E., HAMMOND, D. M., THORNE, J. L. & HIBLER, C. P. (1959). **Experimental infection of young pigs following intranasal inoculation with nasal, gastric, or cecal trichomonads from swine or with *Trichomonas foetus*.** — *J. Parasit.* **44,** 597-602. [Authors' summary modified.] **1740**

Pigs 9 to 52 days old were divided into groups and were inoculated 2 to 4 times either with sterile saline solution, cultures or fresh material containing trichomonads from the nose, stomach, and caecum of pigs or with *Tr. foetus*. The pigs were killed 15 to 29 days after the last inoculation.

No trichomonads were found in any of the uninoculated (control) pigs. Of 5 pigs inoculated with nasal trichomonads, trichomonads were found in the nose of 4 and in the caecum of all. Of 7 pigs inoculated with gastric trichomonads, trichomonads were found in the nose of 7, in the stomach of 2, and the caecum of 5. Of 6 pigs inoculated with caecal trichomonads, trichomonads were found in the nose of 3, in the stomach of 1, and in the caecum of 6. Of 4 pigs inoculated with *Tr. foetus* trichomonads were found in the caecum of all. In addition, trichomonads were found in the small intestine of 2 of 3 pigs inoculated with gastric trichomonads, and in the colon of all 3 of these pigs and of 1 of 3 pigs inoculated with *Tr. foetus*.

ARUNDEL, J. H. (1957). **The control of caecal coccidiosis.**—*Aust. vet. J.* **33,** 256-263. **1741**

This is a brief but good review of management and the coccidiostats, namely sulphaquinoxaline, pyrimethamine, nitrofurazone and nicarbazin, in the control of caecal coccidiosis.

—K. G. JOHNSTON.

SHAPOCHKA, D. F. (1958). **[Treatment of theileria infection in cattle with biomycin (chlortetracycline) combined with sulphantrol.]** — *Veterinariya, Moscow* **35,** No. 11 p. 53. [In Russian.] **1742**

Cattle seriously ill with *Theileria* [? *annulata*] infection were treated for 15 weeks with chlortetracycline and sulphantrol, also receiving symptomatic treatment and succulent fodder. The daily dose of chlortetracycline was 5 g. per 300 kg. body wt., given orally in 4 equal parts half an hour before feeding. Sulphantrol was administered i/v or i/m in a single daily dose of 0·01 g./kg. body wt. All the animals recovered.—E. L. URCH.

HAWKING, F. (1958). **Chemotherapeutic screening of compounds against *Theileria annulata* in tissue culture.** — *Brit. J. Pharmacol.* **13,** 458-460. [Author's abst. modified.] **1743**

Th. annulata grown in tissue culture has been used for screening compounds for chemotherapeutic activity against this parasite. The method described is simple and convenient. Forty compounds, including antimalarials, trypanocides, and antibiotics, have been examined, but none has been found to be active.

HARTLEY, W. J., LINDSAY, A. B. & MACKINNON, M. M. (1958). **Toxoplasma meningoencephalomyelitis and myositis in a dog.**—*N. Z. vet. J.* **6,** 124-127. **1744**

In a 2-month-old pup the only ante-mortem abnormality observed over the ten week period of attempted treatment was progressive incoordination and atrophy of the hindquarters. The c.n.s. showed varying degrees of focal disseminated non-suppurative infective encephalomyelitis, leptomeningitis and radiculitis. Pseudocysts were found at all levels. The cord seemed the more severely affected. Changes of the musculature included myositis and myonecrosis, the tongue being the more severely affected and also exhibiting pseudocysts. The serum before euthanasia gave a dye titre of 1 : 16,000, and a c.f. of 1 : 16.—IRENE M. DIXON.

LAINSON, R. (1958). **Observations on the development and nature of pseudocysts and cysts**

of *Toxoplasma gondii*.—*Trans. R. Soc. trop. Med. Hyg.* **52,** 396-407. **1745**

Confusion has arisen in the use of the terms "cyst" and "pseudocyst" as applied to aggregations of toxoplasms in the tissues of infected animals. L. has examined preparations from experimental animals with either acute infections caused by highly virulent strains, or chronic infections induced with strains of negligible pathogenicity.

With the aid of a series of excellent photomicrographs it is suggested that both terms could be retained.

In acute infections, cells become infected with numerous parasites dividing by binary fission and the cell-membranes of cells in a variety of tissues become stretched to enclose a mass of parasites. The term "pseudocyst" may be retained for these structures which are essentially of a temporary nature and break down to liberate the toxoplasms.

In the chronic infections there becomes established a phase of prolonged binary fission in the deeper tissues, characterized by the formation of a highly elastic, tough membrane about the parasites. This membrane is separate from any enclosing cell.

It is suggested that the term 'cyst' should be retained for these structures. Stages in their development are described and their role in the transmission of the infection is discussed.

—L. P. Joyner.

Rawal, B. D. (1959). **Toxoplasmosis. A dye-test survey on sera from vegetarians and meat eaters in Bombay.** — *Trans. R. Soc. trop. Med. Hyg.* **53,** 61-63. [Author's summary modified.] **1746**

Human sera, 246 from meat eaters and 141 from vegetarians in Bombay, and 224 from adults in Sheffield, were examined by the dye test for toxoplasmosis. At a titre of 1:16 the percentages of positive results were: Bombay meat eaters 18%, Bombay vegetarians 21%, Sheffield adults 14%. The consumption of cooked meat (mainly mutton and chicken) in Bombay has no effect on the incidence of *Toxoplasma* antibodies. It seems unlikely that beef and pork have an important influence, for the incidence of antibodies is nearly the same in Sheffield and Bombay.

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

Marucci, A. A. (1958). **Detection of foot-and-mouth disease antibody in vaccinated cattle by direct complement fixation.** — *Amer. J. vet. Res.* **19,** 979-984. [Author's summary modified.] **1747**

By direct complement fixation, antibodies were detected in the serum of cattle inoculated with type A_5 and type O_2 F. & M. disease vaccines. Maximal c.f. antibody titres were obtained 2–3 weeks after vaccination. Re-vaccination in 23 days resulted in an increased production of antibody which exceeded that following primary vaccination.

Inoculation of active virus, 21 days after vaccination, elicited an antibody response similar to that in non-vaccinated cattle, although vaccinated animals were resistant to generalized infection. A relationship between c.f. antibody and resistance to infection is postulated.

Brooksby, J. B. & Galloway, I. A. (1958). Observations sur la distribution et la détermination des types immunologiques du virus en rapport avec les études épizootologiques sur la fièvre aphteuse. [**Foot and mouth disease: virus typing in relation to epidemiology.**]—*Bull. Off. int. Epiz.* **50,** May. pp. 509-515 **1748**

Tables and a map give the world distribution of virus types identified up to May, 1958. Recent findings are the existence of type O in Iraq, Afghanistan, Vietnam, Ghana, Ethiopia and British Somaliland; type A in Cyprus and the Republic of the Sudan; type C in Ethiopia, Kenya, and Afghanistan; type S.A.T. 3 in Bechuanaland; and type Asia 1 in Burma, Afghanistan and Iran. These findings are interpreted merely as showing the existing distribution of types and not as evidence of recent dissemination.—M.G.G.

Primault, B. (1958). Eléments météorologiques agissant sur l'apparition et l'extension de la fièvre aphteuse. [**Meteorological factors influencing the incidence and spread of foot and mouth disease.**] — *Schweiz. Arch. Tierheilk.* **100,** 383-399. [In French. Summaries in English, German and Italian.] **1749**

Fluctuations in atmospheric pressure and electromagnetic waves were associated with incidence and spread of F. & M. disease in Switzerland. Meteorological and epizootiological data collected over a period of several years were given in support of this hypothesis. [See also *V.B.* **26,** 1222.]—E.G.

Geiger, W. & Garbe, H. G. (1958). Die Vermehrung des MKS-Antigens im neuge-

borenen, nüchternen Kalb. Seine Eignung für die Herstellung der MKS-Adsorbatvakzine. **[Multiplication of the antigen of foot and mouth disease in new-born unfed calves. Its utilization in the preparation of adsorbed vaccine.]**—*Zbl. Bakt. I. (Orig.)* **173,** 321-329. [Summaries in English, French, Spanish and Russian. English summary modified.] **1750**

Infection of new-born, unfed calves with O or A antigen caused systemic infection with high mortality. High virus titres were found only in heart, lung and bone. These organs may be used for vaccine preparation, but higher concentrations of the organ extracts than usual are necessary. The extracts should not be filtered. Such vaccines induced measurable, but not sufficient immunity to type O, and satisfactory protection against type A.

Uhlmann, W. (1958). Beobachtungen über die Empfänglichkeit erwachsener weisser Mäuse für die intraperitoneale Infektion mit dem Virus der Maul- und Klauenseuche. **[Susceptibility of adult mice to intraperitoneal infection with foot and mouth disease virus.]**—*Mh. Tierheilk.* **10,** 234-242. **1751**

Susceptibility of adult mice aged 7–20 weeks to i/p infection with F. & M. disease virus, depended on certain hereditary factors in some inbred lines of mice and on previous g.pig adaptation of the virus.—E.G.

Sergeev, V. A. (1958). **[Technique of drying standard strains of foot and mouth disease virus Types O, A and C.]**—*Vopros. Virusologii* **3,** 367-368. [In Russian.] **1752**

The best stabilizer for adding to virus suspensions before freeze-drying was egg yolk: the storage life of dried virus was rather less when gelatin plus saccharose or milk were used as stabilizers.—R.M.

Dinter, Z. (1958). Studien über das Virus der Maul- und Klauenseuche an Gewebekulturen unter besonderer Berücksichtigung der Ausarbeitung von Methoden der Herstellung und Prüfung von Vakzinen gegen diese Seuche. **[Tissue culture of foot and mouth disease virus.]**—*Nord. VetMed.* **10,** 498-508. [In German.] **1753**

A review of the literature on tissue culture of F. & M. disease virus, with special reference to the author's own work, previously abstracted [*V.B.* **27,** 445 & 3252; **28,** 2825 & 3211].—E.G.

Wittmann, G. & Matheka, H. D. (1958). Zur Verwendung von Chloroform als bakterizides Mittel bei der Herstellung von Virusvakzinen. **[Use of chloroform as a bactericidal substance in the preparation of virus vaccines.]**—*Mh. Tierheilk.* **10,** 161-169. **1754**

Bacteria, moulds and yeasts in adsorbed F. & M. disease vaccine were killed within 3 hours by a 1·94% soln. of chloroform. A 50% soln. killed spores after 14 days. Among the viruses susceptible to chloroform were those of Newcastle disease, equine infectious encephalomyelitis, vaccinia and fowl pox. Non-susceptible were those of porcine encephalomyelitis (Teschen disease), murine encephalomyelitis (Theiler's disease) and F. & M. disease.—E.G.

Konrád, J. & Blažek, K. (1958). Aujeszkého choroba (Morbus Aujeszki) u norků. **[Aujeszky's disease in mink.]**—*Sborn. čes. Akad. zemědělsk. Věd.* **3 (31),** 803-816. [In Czech. Summaries in English and Russian.] **1755**

Aujeszky's disease killed 523 of 712 mink on a farm. Clinically there was paralysis of the lower jaw, circulatory insufficiency but no itch. Death occurred 3–20 hours after first appearance of symptoms. P.M. findings were described. The disease was believed to have been introduced with the food.—E.G.

Ugorski, L. (1958). Przypadek choroby Aujeszky u lisów hodowlanych. **[Aujeszky's disease in silver foxes.]**—*Méd. vét., Varsovie* **14,** 449-450. **1756**

An account of an outbreak in which 28 of 39 foxes died. There was a history of recent feeding of pig offal. The diagnosis was confirmed by serial transmission in rabbits and by histological examination.—M. Gitter.

Wolff, É. & Goube de Laforest, P. (1959). L'application des cultures d'organes embryonnaires à la culture de virus pathogènes. **[Cultivation of pathogenic viruses in cultures of organs of chick embryos.]**—*C. R. Acad. Sci., Paris* **248,** 490-492. **1757**

Within 81 days the virus of fowl pox was passaged 8 times in explants of skin from chick embryos. Typical lesions with Bollinger bodies developed in the skin.—R.M.

Gerber, D. F. & Watkins, H. M. S. (1958). **Hemagglutination and hemagglutination inhibition by normal serum with a canary pox virus strain.** — *J. Immunol.* **81,** 439-444. [Authors' summary modified.] **1758**

A strain of canary pox virus agglutinated red blood cells from only one-fourth of the fowl donors furnishing cells positive for haemagglutination by vaccinia virus. Haemagglutination horse serum. Inhibition titres were inversely pro-

portional to the virus concentration employed and were not affected by incubation at 4°, 26°, or 37°C. When heated at 56°C. for 30 min. the haemagglutinin was thermolabile, the serum inhibitor thermostable. The virus showed no enzymic activity against red cell receptors or against the serum inhibitor. In these aspects, this strain is identical neither with other pox viruses nor with the mumps–Newcastle disease–influenza group.

TRAUB, E. (1958). Über den Verlauf der Infektion mit dem EEE-Virus und die Entwicklung der aktiven Immunität bei erwachsenen Mäusen. **[Infection of adult mice with the virus of Eastern equine encephalomyelitis.]**—*Zbl. Bakt. I.* (*Orig.*) **173,** 330-344. [Summaries in English, French, Spanish and Russian. English summary modified.] **1759**

During the first few hours after s/c infection of adult mice the virus multiplied chiefly in bone marrow, regional lymph nodes and liver. The bone marrow seemed the most important site of multiplication outside the c.n.s. Later the ovaries were highly infectious; their virus content, however, showed considerable, possibly seasonal, variations. The course of the disease was less biphasic than in horses, g.pigs and monkeys. The c.n.s. of some mice was infected during the first 24 hours, in others up to the 96th hour, but in many the brain and spinal cord failed to become infected. No subclinical infection of the c.n.s. was detected. Neutralizing antibodies could be detected in the spleen on the third day after infection. During the following days the highest antibody titre was in the lymphatic system. Antibodies were detected in the liver, kidneys and ovaries. The neutralizing titre of the serum fell within a few weeks, but moderate to low serum titres were maintained for a long time.

WINN, J. F., KAPLAN, W., PALMER, D. F. & SOLOMON, G. (1958). **Sensitivity of swine and cattle to artificial infection with Western equine encephalitis virus.** — *J. Amer. vet. med. Ass.* **133,** 464-466. [Authors' summary modified.] **1760**

Cattle and pigs were inoculated with various doses of Western equine encephalomyelitis virus. The cattle did not develop detectable virus even though doses in the range of 34 million chick LD_{50} were given. The cattle subsequently developed neutralizing antibodies although, in 2 of the 4 heifers, the index was very low.

Pigs seem to have a threshold of infection of about 42 thousand chick LD_{50}. Virus was recovered from the blood of infected pigs at 1 : 10 dilutions, and a neutralizing index varying from 200 to 15,900 resulted three weeks after inoculation. Cattle and pigs are not suitable for sentinel animals and probably do not constitute a reservoir for this virus.

THOMAS, L. A., EKLUND, C. M. & RUSH, W. A. (1958). **Susceptibility of garter snakes (*Thamnophis* spp.) to Western equine encephalomyelitis virus.**—*Proc. Soc. exp. Biol., N.Y.* **99,** 698-700. [Authors' summary modified.] **1761**

It has been demonstrated that garter snakes are susceptible to infection with WEE virus. This is believed to be the first evidence that a virus which is an important parasite of avian and mammalian hosts can infect a cold-blooded vertebrate and cause viraemia of high titre and long duration. The possibility that snakes may play a role in overwintering of the virus is being investigated.

MARKSON, L. M. & BLAXLAND, J. D. (1958). **Infectious avian encephalomyelitis. A description of the disease as seen in England and Wales and an account of some experimental investigations.** — *Vet. Rec.* **70,** 1208-1213. [Authors' summary modified.] **1762**

A non-purulent encephalomyelitis of baby chicks in England and Wales is clinically and histopathologically indistinguishable from infectious avian encephalomyelitis as seen in the U.S.A. The disease was transmitted by intracerebral (i/c) and i/p inoculation of day-old chicks. Attempts at transmission by contact failed. A subclinical encephalomyelitis was demonstrated histologically in some of the progeny of survivors. Subclinical meningoencephalitis was seen in mice and rabbits after i/c inoculation with infective chick brain. Epidemiological aspects of the disease are discussed.

RADOMIŃSKI, W. (1958). Zastosowanie surowicy odpornościowej uzyskanej na zwierzętach laboratoryjnych do odczynu wiązania dopełniacza w rozpoznawaniu niedokrwistości zakaźnej koni, I. Rozdział przeciwciał wg metody Castellani'ego. **[Immune serum from laboratory animals for the complement-fixation test in equine infectious anaemia. I. Separation of sera by Castellani's method.]** — *Méd. vét., Varsovie* **14,** 450-454. [In Polish. Summaries in English and Russian.] **1763**

The immune sera were prepared in rabbits,

and freeze-dried sera of artificially infected horses were used as the source of virus. The rabbits, divided into 5 groups, were given 3 doses of the following adjuvants: suspension of dried and ground *Mycobacterium phlei* in liquid paraffin and lanolin, heat-inactivated suspension of *M. phlei* in physiological saline and 5% glycerol. No reaction was noted and the rabbits were then given 3 injections of the virus with adjuvants i/v, i/m and i/p (the control group received only the virus), at 3, 7 and 10 day intervals. After 3–3½ months the sera of rabbits immunized i/p with oil-bacterial suspensions showed the highest titre. Antibodies against horse proteins were precipitated by Castellani's method using sera of normal and E.I.A. affected horses as antigen. Rabbit sera so prepared were used for the complement-fixation test with serum and spleen extract of sick horses. Positive results were obtained when antigen from normal horses was used for precipitation of horse proteins and negative when it came from E.I.A. affected ones. Further investigation on electrophoretic separation of immune rabbit sera is in progress.
—M. Gitter.

Zakopal, J. (1958). Heinzova tělíska v erythrocytech v diagnostice infekční anaemie koní. **[Heinz bodies in the diagnosis of equine infectious anaemia.]** — *Sborn. čes. Akad. zemědělsk. Věd.* **3 (31),** 345-360. [In Czech. Summaries in German and Russian.] **1764**

The number of Heinz bodies in erythrocytes of 27 horses in the clinical stage of equine infectious anaemia was distinctly higher than that in 31 apparently healthy horses. The diagnostic value was discussed.—E.G.

Itikawa, O. & Shibata, T. (1958). **[Supplemental studies on interrelationship between hepatic and splenic hemosiderosis in equine infectious anemia.]**—*Bull. Nat. Inst. Anim. Hlth, Tokyo* No. 34, pp. 65-81. [In Japanese. Summary in English.] **1765**

Histological examination of the liver and spleen in 345 cases of equine infectious anaemia (E.I.A.) and of 163 non-E.I.A. cases showed that hepatic haemosiderosis was specific to and characteristic of E.I.A. Four types of haemosiderosis were distinguished according to the degree of haemosiderin deposition in the liver and spleen. Type 1: hypersiderosis in both the liver and the spleen was found in 51% of cases; Type II: hepatic hyper- but splenic hypo-siderosis in 26%; Type III: hepatic hypo- but splenic hyper-siderosis in 6%; and Type IV: hypo-siderosis in both the liver and the spleen in 17%. Observations in the non-E.I.A. cases indicated that splenic haemosiderosis can develop with increasing age.—A. Ackroyd.

Nakamura, J. & Macleod, A. J. (1959). **The complement fixation test and its application to the diagnosis of rinderpest.** — *J. comp. Path.* **69,** 11-19. [Authors' conclusions modified.] **1766**

The complement-fixation test for the demonstration of antigen and antibody is a satisfactory method for the diagnosis of the rinderpest disease. Although not always effective in confirming infection in individuals it does enable a diagnosis to be made rapidly on a herd basis. It can also be applied effectively to animals which have some degree of resistance, *e.g.* zebu cattle, and sheep.

The stage of infection at which the samples are obtained is important and fresh lymph nodes are necessary for the preparation of the antigen.

Gilbert, Y. & Mornet, P. (1958). Le virus bovipestique lapinisé. Mise au point et commentaires d'après les travaux effectués à Dakar. **[Studies at Dakar of the lapinized rinderpest virus.]**—*Rev. Élev.* **11,** 117-141. [Summaries in English and Spanish.] **1767**

A review of the literature on the properties of lapinized virus in rabbits and cattle, including some hitherto unpublished data from the Laboratoire Central de l'Elevage at Dakar.
—R.M.

Nguyen-Ba-Luong & Vu-Thien-Thai. (1958). Contribution à l'étude du virus-vaccin contre la peste bovine, souche Nakamura III. **[Studies with the Nakamura III strain of lapinized rinderpest virus.]**—*Bull. Off. int. Epiz.* **50,** May. pp. 559-563. **1768**

Freeze-drying of the Nakamura III strain of rinderpest virus is described. Ox and buffalo calves inoculated with 100 rabbit $I.D._{50}$ of the freeze-dried virus resisted virulent rinderpest virus 2 weeks later.—M.G.G.

York, C. J., Schwarz, A. J. F., Zirbel, L. W. & Estela, L. A. (1958). **Infectious bovine rhinotracheitis vaccine.** — *Vet. Med.* **53,** 522-524. [Authors' summary modified.] **1769**

Data are presented on an extensive field trial with a modified live virus vaccine. Only 1% of the vaccinated cattle developed clinical signs of the infection against 17·2% of the controls. The vaccine protected cattle placed in "feed lots" where active infection existed at the time of their arrival.

DISTURBANCES OF REPRODUCTION are produced in pastures in Western Australia in which an early strain of subterranean clover is dominant. An oestrogenic substance is present in the clover.

In order to contrast various systems of animal breeding a series of comprehensive, long-term trials with sheep have been planned. The chief systems under study are the Australian Mass Selection, the Hagedoorn Nucleus, and the Family System of the Bureau of Animal Industry (U.S. Dept. of Agriculture).

Other breeding investigations concern INHERITANCE OF SKIN WRINKLES, inbreeding of Merino sheep and POLLEDNESS in Merino sheep.

In southern latitudes sunlight lacks effective ultra-violet rays for several weeks during winter. Under these conditions young sheep in New Zealand have benefited from supplements of VITAMIN D. Trials have been designed to test the value of vitamin D in Tasmania and Southern Australia.

Sheep at Gilruth Plains in South-Western Queensland did not benefit from access to a SALT LICK.

Studies on the TOXICITY OF WHEAT for sheep and horses showed that anti-histamine drugs did not prevent untoward effects in animals which had gorged on wheat.

Under the variable seasonal conditions experienced by sheep on pasture the rate of wool production was found to vary by as much as 250%, reflected mainly in change in fibre diameter. A daily supplement of 1–2 oz. of protein for grazing sheep gave economical returns in increased wool production.

Other investigations mentioned in the report deal with wool production factors in Camden Park Merinos and Corriedales at different levels of nutrition, improved methods of measuring certain wool characters, field trials with pastures, and pasture management.—H. McL. GORDON.

CANADA. (1947.) **Report of the Veterinary Director General for the year ended March 31, 1947.** [CHILDS, T.] pp. 41. Ottawa: E. Cloutier. **1406**

The Dominion has remained free from the more serious animal plagues. Staff shortages have limited the scope of the work of eradicating BOVINE TUBERCULOSIS and BRUCELLOSIS.

The one outbreak of ANTHRAX was controlled by vaccination of the 27 cattle in contact. Three of the cattle died.

302,656 cattle were tested for TUBERCULOSIS under the accredited herd plan and 0·2% reacted. Under area testing 411,652 cattle were tested and 0·7% reacted. Under the supervised herd plan out of 40,930 tested there were 0·4% reactors. All reactors are slaughtered. 2,681 herds are supervised and 1,779 herds are free from BRUCELLOSIS. SWINE FEVER occurred on two premises in the province of Ontario and 44 pigs were slaughtered.

There were no outbreaks of GLANDERS, DOURINE, SHEEP SCAB, SCRAPIE, RABIES, FOWL PLAGUE and PNEUMO-ENCEPHALITIS (NEWCASTLE DISEASE).

One hundred and eight food production establishments are being inspected. There was a staff of 400 employed during the year. There was a 9·02% decrease in the total number of animals slaughtered, which amounts to 904,601. Two plants are engaged on horse slaughter. The total of animals slaughtered was 9,122,496 made up of cattle and calves 2,272,431 (–11·66%), sheep 1,170,786 (–5·01%), pigs 3,991,490 (–20·69%), poultry 1,636,919 (+38,67%), horses 50,560 (+540·40%). Percentages of carcasses condemned were as follows :– cattle 0·80%, calves 1·74%, sheep 0·43%, pigs 0·28%, poultry 1·61% and horses 0·46%.

Of calves slaughtered 60·86% were male and 39·14% were female.

Only two animals infected with EQUINE SCABIES were found. Outbreaks of BOVINE SCABIES occurred in the Provinces of Nova Scotia (48 head), Ontario (23 head), and Alberta (four head).—J. A. GRIFFITHS.

U.S.A. (1947.) **The Rockefeller Foundation. A review for 1947.** [FOSDICK, R. B.] pp. 64. New York: The Rockefeller Foundation. **1407**

It is not possible to summarize adequately this review of the activities of this liberal organization.

In 1947 representatives of the Rockefeller Foundation visited every country in the world except Bulgaria and the Soviet Union. During the year $21,450,000 were distributed. Of this 39% was expended for work in the U.S.A. and 61% for work in other countries. The distribution was in seven categories :– Public Health $2·25 million, Medical Sciences $1·5 m., Natural Sciences $1·7 m., General Education Board $1·5 m., China Medical Board $10 m., Social Sciences $3 m., Humanities $1·5 m.

Since V.J. Day the Rockefeller Foundation has distributed over $5·5 m. for various activities in the war-crippled countries. The aim has been first to get research restarted by providing equipment to Universities, Libraries and Research Centres and second to re-establish the contacts of these institutions with each other and the rest of the world. All five divisions of the Foundation have participated, *i.e.*, Natural Sciences, Medical Sciences, Humanities, Social Sciences and Public Health. The largest grants were made in Great Britain, France, Denmark, Holland, Norway,

Newcastle disease virus serologically in pigs with clinical symptoms of Teschen disease.] —*Sborn. čes. Akad. zemědělsk. Věd.* **3 (31),** 503-514. [In Czech. Summaries in German and Russian.] **1776**

Specific Newcastle disease antibodies were not demonstrable by the haemagglutination-inhibition test in 98 serum samples from slaughter pigs, nor in 70 samples from pigs with clinical Teschen disease. One piglet injected s/c with 1 ml. of an avirulent Newcastle disease virus developed an antibody titre of 1:32, a cockerel injected with 0·5ml., a titre of 1:512.—E.G.

Goret, P., Brion, A., Fontaine, M. & Pilet, C. (1958). Première enzootie de "pneumonie à virus" du porc constatée en France. Recherches préliminaires sur la souche de virus isolée. [**First confirmed outbreak in France of virus pneumonia of pigs.**]—*C.R. Acad. Sci., Paris* **247,** 1531-1532. **1777**

Pneumonia was readily transmitted to piglets by intranasal and pharyngeal application of lung tissue from affected pigs. Lung from animals infected 88 days previously was still infective. S/c inoculation of infective tissue caused sero-fibrinous inflammation of peritoneum, pleura, pericardium and joints, and pneumonia. Infectivity of virulent material was destroyed by contact for 3 hours with chlortetracycline or oxytetracycline. The virus was passaged 3 times in the yolk of embryonated eggs but it did not survive inoculation into allantoic fluid or onto chorio-allantoic membrane.—R.M.

Urman, H. K., Underdahl, N. R. & Young, G. A. (1958). **Comparative histopathology of experimental swine influenza and virus pneumonia of pigs in disease-free, antibody-devoid pigs.**—*Amer. J. vet. Res.* **19,** 913-917. [Authors' summary modified.] **1778**

Disease-free, antibody-free pigs, obtained by hysterectomy and housed in isolation, were infected when week-old with the viruses causing swine influenza or virus pneumonia of pigs (VPP). Both viruses stimulate similar consolidation of the apical and cardiac lobes; however, the response of the bronchial lymph nodes was different. Histopathological changes in both consist primarily of small and large round-cell infiltrations.

Swine influenza virus elicited consistent tissue responses from the 3rd–5th day which were distinct from VPP. Degenerative and regenerative changes were observed in this early period. From the sixth day, however, small and large round cells were increasingly evident in perivascular and peribronchiolar reactions. Maximum cellular reaction had occurred by the 11th day.

No histopathological changes were observed in VPP-infected pigs in the first 10 days. After that time, a gradual but increasingly severe small round and lymphocytic cell infiltration occurred. Perivascular reactions were often so severe that it was difficult to distinguish the vessels. The lumina of bronchi were almost obstructed due to hyperplasia of lymphatic tissue within the propria mucosa. Swine influenza virus did not elicit as marked an infiltration of round cells as VPP. There was no evidence in VPP of the necrosis or regeneration characteristic of swine influenza virus infection.

Pivník, L., Mesaroš, E. & Vaňejka, F. (1958). K diferenciálnej diagnostike afekcií centrálneho nervového systému u ošípaných. III. Listerióza ošípaných so súčasnou izoláciou virusu chrípky (typu Shope) z ošípaných a potkanov. [**Differential diagnosis of diseases of the central nervous system in pigs. III. Simultaneous infection with *Erysipelothrix monocytogenes* and Shope-type influenza virus in pigs and wild rats.**] — *Sborn. čes. Akad. zemědělsk. Věd.* **3 (31),** 161-178. [In Slovak. Summaries in English and Russian.] **1779**

Two strains of *Erysipelothrix* (*Listeria*) *monocytogenes* were isolated from four piglets with nervous symptoms and pneumonia. Shope-type virus was isolated from lung material of one piglet and four rats found dead in the locality. *E. monocytogenes* was not demonstrable in the rats. Details were given, accompanied by six photomicrographs, of histological lesions in the c.n.s. of the piglets.—E.G.

I Harnach, R. (1958). Výsledky imunisačnich pokusů při enzootické bronchopneumonii selat. [**Immunization trials in enzootic porcine bronchopneumonia (swine influenza).**] —*Sborn. čes. Akad. zemědělsk. Věd.* **3 (31),** 1-12. [In Czech. Summaries in English, German and Russian.] **1780**

II. Jirků, L. (1958). Srovnáváci studie imunizačniho efektu vakciny virus-adsorbátové a vakciny BVE 67 při enzootické bronchopneumonii (chřipce) prasat. [**Immunization of pigs against swine influenza with adsorbed virus and BVE 67 vaccine.**]—*Ibid.* 869-876. [In Czech. Summaries in English, German and Russian.] **1781**

I. The maiority of porcine pneumonia viruses isolated in Czechoslovakia were serologically closely related to, if not identical with

Shope's virus, with the exception of one strain which resembled that described by Gulrajani & Beveridge [*V.B.* **22,** 1343 & 2499]. Two s/c doses each of 3 ml. at an interval of 2–3 weeks of either phenolized or formolized aluminium hydroxide-adsorbed vaccine prepared from four local virus strains protected all of 112 pigs against natural infection but only about 120 of 150 against experimental intranasal infection. A mixture of this vaccine and a heat-inactivated suspension of 12 strains of pyogenic bacteria from lung lesions of infected pigs protected pigs against natural and laboratory infection. 44% of controls succumbed to natural exposure and 85·7% to intranasal infection with virus alone, 100% to infection with a mixture of bacterial and virus material. BVE 67, a vaccine consisting of 12 strains of heat-inactivated bacterial lung lesion contaminants and a 2·5% yatren [chinofon sodium]–casein soln. was used with 65–100% success as a therapeutic and prophylactic in a field trial involving about 250,000 pigs. In 50 piggeries the vaccine used had been prepared from herd-specific contaminants.

II. For the control of swine influenza in store pigs and brood sows and consequently their offspring, J. advocated use of both aluminium-adsorbed Shope's virus vaccine and BVE 67. Details were given of experimental work in 300 pigs.—E.G.

MAREK, J. (1958). Výzkum o imunisačni dynamice virové fenol-adsorbátové vakciny proti enzootické bronchopneumonii (chřipce) selat. **[A phenolized adsorbed swine influenza vaccine.]**—*Sborn. čes. Akad. zemědělsk. Věd.* **3 (31),** 217-228. [In Czech. Summaries in English and Russian.] **1782**

Mild respiratory symptoms were observed in only two of 112 young piglets exposed to natural infection with swine influenza, after immunization with a vaccine prepared from chick embryo-passaged phenolized virus, adsorbed on 2% aluminium hydroxide. Of 27 controls 12 developed the disease.—E.G.

DONE, J. T. (1958). **Inclusion-body rhinitis of swine: nasal scrapings as an aid to diagnosis.** —*Vet. Rec.* **70,** 877-878. [Author's summary modified.] **1783**

Scrapings from the nasal mucosa stained by Giemsa stain or methylene blue are a useful aid to the diagnosis of inclusion-body rhinitis of swine. An illustrated description is given of the morphology of the characteristic inclusion-bearing cells (IBR cells) as seen in scrapings. Diagnosis on nasal scrapings is applicable only in the early stages of the clinical disease since IBR cells are not found after about a fortnight. Within this limitation nasal scrapings are comparable in accuracy with paraffin sections of the turbinates, and have the advantage that they may readily be made in the field.

PALLUDAN, B. (1958). Rhinitis med inklusionslegemer hos svin. En kasuistisk meddelelse. **[Inclusion-body rhinitis of pigs.]** — *Nord. VetMed.* **10,** 653-656. [In Danish. Summaries in English, French and German. English summary modified.] **1784**

Inclusion-body rhinitis similar to that described by Done [*V.B.* **26,** 565] was found in 2 pigs aged 5 weeks. The intranuclear inclusions consisted partly of large granular basophile inclusions and partly of smaller acidophile inclusions in the glandular epithelium.

GOODWIN, R. F. W. & JENNINGS, A. R. (1959). **Infectious gastro-enteritis of pigs. I. The disease in the field.**—*J. comp. Path.* **69,** 87-97. [Authors' conclusions modified.] **1785**

A description is given of a highly infectious gastro-enteritis of pigs which is widespread in East Anglia. Clinically, the disease has a short incubation period and causes heavy mortality among new-born piglets. There is profuse diarrhoea, often on a herd basis, occasional vomiting, but rarely pyrexia. The chief lesions are varying degrees of gastro-enteritis, with acute congestion of the mesenteric and meningeal vessls. In new-born piglets the only macroscopic finding may be ballooning of the jejunum with gas.

The disease closely resembles the Transmissible Gastro-enteritis described in the U.S.A.

CELLO, R. M., MOULTON, J. E. & MCFARLAND, S. (1959). **The occurrence of inclusion bodies in the circulating neutrophils of dogs with canine distemper.**—*Cornell Vet.* **49,** 127-146. [Authors' summary modified.] **1786**

Inclusion bodies were demonstrable in the circulating neutrophiles of dogs with distemper. Fluorescent-antibody studies showed that these inclusions contained specific viral antigen of this disease.

VRTIAK, J. (1958). Epizootologické zvláštnosti Newcastleskej choroby na východnom Slovensku. **[Epidemiology of Newcastle disease in eastern Slovakia.]** — *Sborn. čes. Akad. zemědělsk. Věd.* **3 (31),** 437-448. [In Slovak. Summaries in German and Russian.] **1787**

In eastern Slovakia Newcastle disease occurred throughout the year, but incidence was highest in spring and early summer. From 530 samples the virus was isolated from 88 chicks,

44 adult fowls, 3 pigeons, 2 pheasants, one partridge, one turkey and one swan. About 5·5% of positive samples were from vaccinated birds. Haemorrhages in the glandular stomach were present in about 60% of adult fowls and 40% of chicks, and respiratory lesions in 34% of adults and 52% of chicks which had died from Newcastle disease. In 27% of chicks, infection coincided with coccidiosis. Of 275 serum samples from ducks, 42 inhibited haemagglutination in dilutions of 1:32 and higher and the virus was isolated from 48 of 265 brain, spleen and lung tissue samples. The role of ducks as latent carriers of the disease was discussed.—E.G.

I. Miyamoto, T. & Nagashima, H. (1957). **Experimental studies on the Blacksburg strain of Newcastle disease virus.**—*N.I.B.S. Bull. biol. Res., Tokyo* **2,** 34-41. [In English.] **1788**

II. Miyamoto, T., Nagashima, H. & Kaneko, S. (1957). **Immunogenic effect of booster injection of killed Newcastle disease vaccine with aluminum hydroxide gel added.**—*Ibid.* 42-47. [In English.] **1789**

I. Blacksburg is apparently the authors' name for Strain B1 described by Hitchner & Johnson [*V.B.* **20,** 931]. Its pathogenicity and immunogenic properties were compared with a formolized aluminium hydroxide vaccine previously described [*V.B.* **27,** 777].

II. In most of the chicks vaccinated with 2 doses of formolized aluminium hydroxide Newcastle disease vaccine at an interval of 6 months, strong virus-neutralizing antibody was demonstrated in the serum for at least 2 years after the last injection. Any additional injection of the vaccine had little effect on the titre.

—R.M.

Bankowski, R. A., Corstvet, R. & Fabricant, J. (1958). **A tissue culture-modified Newcastle disease virus. III. The immunity induced by the modified virus and crystal violet inactivated vaccines in laying birds.** — *Avian Diseases* **2,** 466-494. [Authors' summary modified.] **1790**

A tissue culture modified Newcastle disease virus (TC) administered i/m to 11-week-old chickens caused immunity without untoward reactions. Two doses given 9 weeks apart produced higher and more persistent antibody titres than did two doses of crystal violet vaccine (CV). Both vaccines gave good protection against nervous symptoms and death after i/m and air-borne challenge with the GB strain for 45 and 50 weeks after the second dose of TC and CV vaccines respectively. Neither house controls nor contact controls developed antibodies or a resistance to challenge throughout a 54-week period. The immunity of the respiratory and reproductive tracts after vaccination with TC and CV was tested by several methods, using both i/m and air-borne routes of challenge. The lack of correlation of these results with antibody titres in the sera of individual birds is discussed in detail.

Hallauer, C. (1958). Züchtung und Abwandlung des atypischen Geflügelpestvirus (NDV) in Explantaten menschlicher Provenienz. **[Cultivation and transformation of Newcastle disease virus in explants of human origin.]**—*Arch. ges. Virusforsch.* **8,** 397-409. **1791**

Newcastle disease virus was passaged 10–70 times in human carcinoma and HeLa cells and normal human amniotic and kidney tissue. All these tissues were highly susceptible to the virus. Tissue damage by the virus in amniotic explants was often incomplete. Surviving latently infected tissues were resistant to massive superinfection with virulent Newcastle disease and fowl plague virus. Continued passage in HeLa cells and amniotic explants produced a variant which was non-pathogenic for fowls but retained its immunizing properties. [See also *V.B.* **28,** 442; 1441 & 3248.]—E.G.

Wilcox, W. C., Wood, E. M., Jang, O. Oh., Everett, N. B. & Evans, C. A. (1958). **Morphological and functional changes in corneal endothelium caused by the toxic effects of influenza and Newcastle disease viruses.** — *Brit. J. exp. Path.* **39,** 601-609. [Survey of paper (p. i) modified.] **1792**

Intraocular inoculation in rabbits of Newcastle disease or influenza viruses produced progressive destruction of the endothelium, causing an altered exchange relationship between the corneal stroma and the aqueous humour which resulted in corneal oedema and opacity. Regeneration of the endothelium was associated with diminution of oedema and opacity, and the development of a transitory refractoriness to challenge with the homologous virus. Virus multiplication in the cornea was not demonstrable.

Chomiak, T. W., Luginbuhl, R. E. & Jungherr, E. L. (1958). **The propagation and cytopathogenic effect of an egg-adapted strain of infectious bronchitis virus in tissue culture.** — *Avian Diseases* **2,** 456-465. [Authors' summary modified.] **1793**

The Beaudette strain of infectious bronchitis virus was cytopathogenic for embryo-kid-

ney cells on second passage. The cells shrank or became evenly granular, and the periphery became very distinct. By the tenth passage the titre was $10^{4.7}$ in cell cultures and 10^{7} in embryos. Virus propagated in tissue culture remained as lethal for embryos as virus propagated in embryos. In tissue culture the virus disappeared from the fluid in 4 hours, reappeared in 16 hours, and reached maximum titre at 48 hours, where it remained for 24 hours and then declined. In cell cultures the virus propagated in tissue culture was neutralized by immune sera for the Massachusetts and Connecticut strains, but not by normal serum. However, the same virus, when tested in embryos, was neutralized only by Massachusetts immune serum. Virus passaged in embryo-kidney cells was cytopathogenic for chick-embryo-fibroblast cultures.

Snoeyenbos, G. H. & Basch, H. I. (1958). **A further indication of egg transmission of infectious synovitis.**—*Avian Diseases* **2,** 494-498. [Authors' summary modified.] **1794**

It was difficult to induce infectious synovitis in fowls. This appears to be due to age resistance, as chicks are readily infected. The agent was isolated twice from the yolk sacs of dead embryos from eggs laid by birds exposed to the agent.

Snoeyenbos, G. H., Basch, H. I. & Sevoian, M. (1958). **Infectious synovitis: II. Drug prophylaxis and therapy.**—*Avian Diseases* **2,** 514-530. [Authors' summary modified.] **1795**

A marked variation in drug sensitivity existed between some strains of infectious synovitis agent. The response of turkeys to prophylactic medication was essentially the same as in chickens. No difference in susceptibilty to infectious synovitis was found in chickens between 23 and 104 days of age. The amount of the agent used for infection influenced the length of the incubation period but had no direct relationship to the amount of chlortetracycline necessary to prevent lesions. Chlortetracycline was consistently more effective as a prophylactic given in the food than oxytetracycline; furazolidone was consistently less effective than either of these tetracyclines. Dihydrostreptomycin was effective if administered s/c early in the incubation period. Cathomycin *per os* had some activity against the agent but erythromycin either *per os* or s/c had little or no effect.

Kunst, H. (1958). **Experiments with duck-plague virus in day old chicks.** — *Tijdschr. Diergeneesk.* **83,** 1159-1161. [In English. Summaries in Dutch, French and German. English summary modified.] **1796**

Day-old chicks proved to be susceptible to duck plague virus. After 15 passages the virus was still virulent for ducks.

In a sample of duck serum from Canton, antibodies against duck plague were demonstrated. So it is very probable that duck plague virus like that isolated in the Netherlands also occurs in China.

Asplin, F. D. (1958). **An attenuated strain of duck hepatitis virus.**—*Vet. Rec.* **70,** 1226-1230. [Author's summary.] **1797**

This paper reports experiments and observations on a strain (TN) of duck hepatitis virus which was found to have become attenuated for ducklings, following propagation in chick embryos.

Ducklings inoculated with this strain rapidly developed resistance to inoculation with a virulent strain and also when exposed to natural disease on infected premises.

Puncture of the foot web with mounted sewing machine needles which had been wetted with a suspension of the TN virus provided an easy and satisfactory method of immunisation of young ducklings.

Mortality from all causes during the seven day period after inoculation by foot stab with the TN virus was 5 out of 631 ducklings.

Direct duckling to duckling passage of a sample of TN 57 virus showed definite evidence of enhancement in virulence.

Neustroev, V. D., Khanduev, T. T. & Milyutin, V. N. (1958). **[Use of luminescent microscopy for the detection of psittacosis virus in organs of infected animals.]**—*Vopros. Virusologii* **3,** 330-333. [In Russian. Summary in English.] **1798**

Smears from infected mice and chick embryos were fixed and then stained with fluorescent dyes, the best of which was 1 : 30,000 acridine orange. Virus particles in stained smears gave bright green fluorescence.—R.M.

I. Pavilanis, V., Duval, L., Foley, A. R. & L'Heureux, M. (1958). **An epidemic of Q fever at Princeville, Quebec.** — *Canad. J. publ. Hlth* **49,** 520-529. **1799**

II. Pavilanis, V. (1959). **Melophagus ovinus, a possible vector of Q fever in the province of Quebec.**—*Ibid.* **50,** 31. **1800**

I. The epidemic affected 30 abattoir workers. Antibodies were found in sera from 133 of 1,341 cattle and 54 of 91 sheep. The organism

was isolated from 4 ewe placentas and from the ked *Melophagus ovinus*

II. *R. burneti* was demonstrated in 4 of 10 samples of *M. ovinus*. The rickettsia was experimentally transmitted from rabbit to sheep by the keds.—R.M.

Babudieri, B. (1958). **Studies on the microscopic slide-agglutination test for Q fever.**—*Bull. World Hlth Org.* **19,** 981-994. [Summary in French. Author's synopsis modified.] **1801**

Using the sera of sheep infected with Q fever, the microscopic slide-agglutination test was about 10 times as sensitive as the capillary and the macroscopic tube-agglutination tests, and more than 20 times as sensitive as the complement-fixation test. The sensitivity can be further enhanced by the addition of inactivated bovine serum and complement ("conglutination"), but for routine diagnosis or epidemiological studies, the test is sufficiently sensitive without these complications.

See also absts. **1860** (Rous sarcoma antibodies in fowls); **1892** (latent rickettsiosis activated by liver fluke, and necrotic hepatitis); **1974** (report, Australia).

IMMUNITY

DeWitt, C. (1958). **Differential effect of hog gastric mucin on properdin and host resistance to infection.**—*J. Bact.* **76,** 631-639. [Author's summary modified.] **1802**

Various samples of commercial hog gastric mucin were examined for their relative ability to promote infection when given intraperitoneally in large amounts simultaneously with the infection, for their *in vitro* anti-properdin activity, and for the ability of small amounts to produce early non-specific immunity to a later infection.

Although there was considerable variation in infection-promoting ability and *in vitro* anti-properdin activity from one mucin sample to another, all samples studied possessed a uniformly high anti-properdin activity *in vivo*. Individual differences in this latter were small and were demonstrable only when small amounts of mucin were given.

Accompanying this anti-properdin activity were profound changes in the host defences to infection which did not appear to be causally related to the other factors studied.

Bednekoff, A. G., Stone, W. H., Irwin, M. R. & Link, K. P. (1958). **Chemical studies on the J substance of cattle serum.** — *Proc. Xth int. Congr. Genet., Montreal* **2,** (Absts.) 19. **1803**

The authors' findings indicated that the J substance was a glycoprotein with electrophoretic mobility similar to the alpha globulins of serum. [See also *V.B.* **27,** 1125].—R.M.

Stone, W. H. & Irwin, M. R. (1958). **Blood types of the progeny of a pair of cattle twins showing erythrocyte mosaicism.** — *Proc. Xth int. Congr. Genet., Montreal* **2,** (Absts.) 278. [Authors' abst. modified.] **1804**

Progeny from each of a pair of twin bulls with erythrocyte mosaicism were tested. Each twin possessed in approx. equal proportions two antigenically distinct kinds of blood cells. The progeny of each twin sire possessed in expected proportions only those antigenic factors produced by the genes corresponding to the genotype of the sire. Thus the intimate association, beginning in early embryonic life, of the two kinds of haematopoietic tissue in each twin did not demonstrably affect either the cellular antigens formed by these tissues or the genes for cellular antigens transmitted by each twin to its offspring.

Joysey, V. C., Goodwin, R. F. W. & Coombs, R. R. A. (1959). **The blood groups of the pig. VI. Red cell antigens other than the A-O system.** — *J. comp. Path.* **69,** 29-44. [Authors' conclusions modified.] **1805**

Sera from six sows that affected their litters with haemolytic disease were analysed to produce specific testing reagents. With these reagents, eleven red cell antigens of the pig were characterized.

Anti-4, anti-5 and anti-8 are best demonstrated by the antiglobulin sensitization test, which is the only satisfactory method for detecting anti-3 and anti-6. Anti-1 and anti-2 can be well demonstrated by direct agglutination.

Some progress has been made in enumerating the iso-antibodies that could have been concerned in 20 field cases of haemolytic disease. To date, those most commonly found have been anti-3, anti-6 and anti-8.

Goldgraber, M. B. & Kirsner, J. B. (1958). **Granulomatous lesions — an expression of a hypersensitive state. An experimental study.** —*Arch. Path.* **66,** 618-634. [Authors' summary modified.] **1806**

Five of 12 sensitized g.pigs on the third day after the eliciting injection (crystalline egg albu-

men), developed granulomata, with or without giant cells. These animals and the others of the same group also manifested diffuse histiocytosis, endothelial and perithelial proliferation, and thickening of fatty-tissue trabeculae.

Only 1 of 12 g.pigs given injections of a non-specific antigen developed a significant mesenchymal reaction, with formation of multinucleated cells. Only oedema and residual inflammatory changes were noted in the remaining 11 animals. The granuloma, with or without giant cells, though not pathognomonic, is highly characteristic of the hypersensitive state in the experimental animal.

JOUBERT, L., FLORIO, R., COTTEREAU, P., OUDAR, J. & VALENTIN, L. (1958). Accidents allergiques chez le poulain, le veau et le porcelet, dûs aux autovaccins d'exploitation. **[Allergic accidents in foal, calf and piglet caused by vaccines.]** — *Rev. Méd. vét.* **109,** 445-451. [Summaries in English and Spanish.] **1807**

Allergic or anaphylactic symptoms after a second injection of vaccine are described in foals, calves and piglets. They did not develop if the dams were vaccinated during pregnancy. —M.G.G.

BRAUNE, J. F. (1958). Über die Auslösung von Anaphylaxie-Erscheinungen bei Meerschweinchen durch präzipitierende Antikörper. V. Vergleichende Untersuchungen zwischen Präzipitationsoptimum und Schockoptimum. **[Anaphylaxis in guinea-pigs provoked by precipitating antibodies. V.]**—*Zbl. Bakt. I. (Orig.)* **173,** 107-115. [Summaries in English, French, Spanish and Russian. English summary modified.] **1808**

Anaphylactic shock can be provoked in g.pigs not only by the classical anaphylaxis experiment but also by antigen–antibody complexes produced *in vitro,* if the proper amounts of antigen and antibody are mixed. Other than such optimal amounts are tolerated without sequelae. The shock-provoking antigen–antibody complexes seem to react with cells, thus liberating H-substances.

See also absts. **1651** (Staph. aureus antigens); **1664** (specific fermented TB. antigen); **1665-1674** (TB.); **1680-1682** (swine erysipelas); **1694-1696 & 1700-1709** (brucellosis); **1719** (combined vaccination against plague, tularaemia, brucellosis and anthrax); **1720** (incomplete antibodies); & **1724** (slide agglutination in C. albicans infection); **1725** (yeast cell agglutination); **1728** (c.f. test in bovine contagious pleuropneumonia); **1747 & 1750-1753** (F. & M. disease); **1754** (virus vaccines); **1758** (canary pox); **1759-1760** (Eastern equine encephalomyelitis); **1763** (equine infectious anaemia); **1776** (absence of Newcastle disease virus in pigs with clin. Teschen disease); **1780-1782** (swine influenza); **1787-1792** (Newcastle disease); **1801** (Q fever); **1830** (schistosomal complement fixation test).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

ANON. (1958). **Fleas. Their medical and veterinary importance.** — *Econ. Ser. Brit. Mus.* No. 3A. pp. 20. **1809**

After short notes on external structure and life history there are longer sections on the fleas which cause annoyance by reason of blood-sucking: mobile fleas (*e.g. Ctenocephalides*), semi-sedentary fleas (Vermipsyllidae) and sedentary fleas (*Tunga, Echidnophaga*), and fleas which act as disease vectors of plague, tularaemia, myxomatosis, etc. The illustrations (one in colour) and format are of the usual high British Museum standard.—W. N. BEESLEY.

MARTIN, H. M. (1958). **Screwworms in domestic animals in southeastern Pennsylvania in 1957.**—*Vet. Ext. Quart. Univ. Pa* No. 152. pp. 34-41. **1810**

During the summer of 1957, *Callitroga hominivorax* appeared in Pennsylvania for the first time. It is presumed that maggots were brought in on infested livestock from the south. The outbreak lasted about three months, ending in early November, and over 1,000 animals, mainly cattle, were infested. M. discussed the natural history of the fly and control of maggot lesions with aerosols, smears, etc. The formulae of Smears 62, 82 and EQ 335 (which destroy the larvae and repel the adult fly) are given. —W. N. BEESLEY.

OGDEN, L. J. & KILPATRICK, J. W. (1958). **Control of *Fannia canicularis* (L.) in Utah dairy barns.** — *J. econ. Ent.* **51,** 611-612. [Authors' abst. modified.] **1811**

Cords impregnated with parathion and diazinon were hung from ceilings in dairy byres, calf pens, and sheds at rates of about 30 feet of cord per 100 sq. feet of floor. *F. canicularis* was controlled in 5 of 6 dairies throughout the 12-week observation period and at the sixth dairy for 9 of the 12 weeks. Dry baits containing malathion and D.D.V.P. (dimethyl dichloro vinyl phosphate) exposed in wooden trays at a rate of 4 oz./1,000 sq. feet of floor failed to reduce the numbers of *F. canicularis*.

HARRISON, I. R. (1958). **The effect of Dow ET-57 on warble fly larvae and lice infestations in cattle.** — *Vet. Rec.* **70,** 849-852. [Author's summary modified.] **1812**

The effectiveness of Dow ET-57 for the con-

trol of warble fly larvae in cattle was demonstrated in two trials. Two warbles developed on the backs of 19 bullocks dosed with ET-57, as opposed to 109 on 19 untreated animals. Animals heavily infested with sucking lice were effectively cleared of the infestation following dosing.

KENNY, J. E. & THORNBERRY, H. (1958). **Trolene (Dow ET-57) trials 1957-58.**—*Irish vet. J.* **12,** 198-200. **1813**

108 cattle, 1–2 years old, were dosed orally in November 1957 with Trolene at the rate of 100 mg./kg. and, with 113 controls, were distributed over four farms. Warble counts were made in March, April, June and July, 1958. The total numbers of warbles appearing each month were 52, 286, 314 and 72 (treated group), and 375, 1,011, 540 and 154 (control group). This indicated an overall percentage control of 42–86%.

There was no evidence of toxicity in any of the treated animals.—W. N. BEESLEY.

TURNER, E. C., JR. & GAINES, J. A. (1958). **Systemic insecticides for control of cattle grubs in Virginia.**—*J. econ. Ent.* **51,** 582-585. [Authors' abst. modified.] **1814**

Warbles were satisfactorily controlled by oral administration of Dowco 109 [phosphoramidothioic acid methyl, *O*–(4-*terts* butyl-2-chlorophenyl) *O*–methylester] at 15 mg./kg. or Dow ET-57 at 110 mg./kg., but *O,O,* dimethyl-*S*-(*N*-methylcarbamoylmethyl) phosphorodithioate at 8 or 15 mg./kg. gave only moderate control. Excellent control was obtained by spraying either Dowco 109 or Bayer 21/199. Dowco 109 could be applied as a systemic with equal effectiveness in any month from August to December. Weight gains in animals fed a winter subsistence diet did not improve after treatment. On the other hand, animals on a fattening ration grew much better than untreated animals. Systemic insecticides greatly reduced the number of holes and fresh scars in the hides.

NEEL, W. W. (1958). **Field tests with systemic insecticides for the control of cattle grubs.**—*J. econ. Ent.* **51,** 793-795. [Author's abst. modified.] **1815**

Three systemic insecticides were tested in Mississippi to establish their effectiveness for the control of *Hypoderma lineatum*. Dow ET-57 (Trolene) as a bolus, and Bayer 21/199 (Co-Ral) as a spray, when applied in the late summer or early autumn were equally effective and gave better control than Am. Cyanamid 12880 (Dimethoate).

No significant weight gain due to treatments could be shown. The average numbers of warbles per untreated animal in four test herds were 13·1, 16·1, 11·0 and 11·9.

WADE, L. L. & COLBY, R. W. (1958). **Treatment time with Dow ET-57 for cattle grub control.**—*J. econ. Ent.* **51,** 808-809. [Authors' abst. modified.] **1816**

Warble control in cattle given Dow ET-57 alone or with purified phenothiazine during different months ranged from 80 to 100%. There were no appreciable differences with dosages of 75 and 100 mg./kg. Dow ET-57 and 100 mg/kg. purified phenothiazine. Also, there were no differences between the control obtained from treatment as early as May and any time before the appearance of warbles on the backs.

MCGREGOR, W. S., WADE, L. L. & COLBY, R. W. (1958). **Systemic control of *Dermatobia hominis* (L., Jr.) in Central and South American cattle with Narlene insecticide.**—*J. econ. Ent.* **51,** 724-725. [Authors' abst. modified.] **1817**

D. hominis infestation in cattle was controlled by a single oral dose of 20 mg./kg. or a 0·5 to 0·75% spray of Narlene [*O*-methyl, *O*(4-tert-butyl-2-chlorophenyl) methyl phosphoramidothioate]. A second treatment was not necessary for 8 weeks.

BRUNDRETT, H. M., DEER, J. A. & GRAHAM, O. H. (1958). **Control of horn flies in the Rio Grande Valley of Texas with Bayer 21/199 sprays.**—*J. econ. Ent.* **51,** 746. **1818**

Encouraging work on the effect of Bayer 21/199 [Muscatox, Resitox] on warbles [*V.B.* **27,** 3030] led to its consideration for the control of horn flies, *Siphona* (*Lyperosia*) *irritans*. One herd, which averaged 50 flies per head, was sprayed with 0·25% concentration (2 quarts per animal, 300 lb./sq. in.). The flies returned as soon as the hair began to dry off, but next day and for the following 3 weeks no more flies were observed on the treated cattle. A second treatment had a further 3 week repellent action. When 0·25% was compared with 0·5% Bayer 21/199, the 0·5% strength appeared to give control for up to 7 weeks (1st application) and about 2–3 weeks (2nd application); 0·25% on this occasion gave control for at least 4 weeks. 0·5% methoxychlor spray gave control for at least 7 weeks. Results were complicated by differing rates of re-infestation, and may not be repeatable under different conditions.

—W. N. BEESLEY.

HARGETT, L. T. & TURNER, E. C., JR. (1958). **Horn fly control by the use of insecticidal dusts in self-applicating devices.** — *J. econ. Ent.* **51,** 795-798. [Authors' abst. modified.] **1819**

Toxaphene, chlordane and Bayer 21/199 dusts were used in cable-type back-rubbers for horn fly control on beef cattle. Methoxychlor and Bayer 21/199 dusts were also used in a special cable-type back rubber. The data obtained demonstrated that these materials in a dust form may be used successfully in back-rubbers for the control of horn flies on beef and dairy cattle.

POTTS, W. H. (1958). **Sterilization of tsetse-flies (*Glossina*) by gamma irradiation.**—*Ann. trop. Med. Parasit.* **52,** 484-499. [Author's summary modified.] **1820**

A description is given of the subjection, in England, of pupae of *G. morsitans*, collected in East Africa, to gamma radiations, and of the maintenance in London of the flies emerging from them. The results may be summarized as follows.

Pupal mortality. Though there is no evidence that pupal mortality was increased by doses of up to 12×10^3 r.e.p. in pupae which had passed the first third of their development at the time of irradiation, it is likely that there would be an increased mortality in samples containing younger pupae, and also in samples from which the weaker individuals had not been eliminated by the hazards undergone between collection and irradiation. Mortality was considerably higher at a dose of 36×10^4 r.e.p. given at a higher rate.

Length of life of the males emerging from irradiated pupae was approximately halved.

Mating ability of the males was completely unaffected by irradiation in the pupal stage; they appeared to mate as readily throughout their life as normal males.

Male potency. Complete sterilization of the males was not effected by irradiation at 6×10^3 r.e.p., and the extent of the residual fertility was of the order of about 20%; the fertility of the females mated with these males, when they reproduced at all, was only about half that of those mated with normal males, and it is perhaps reasonable to regard the proportion of males not fully sterilized as effectively nearer to 10% than to 20%.

Female fertility. The residual fertility of females from pupae irradiated by doses of between 3 and 12×10^3 r.e.p. was about 16%, and the proportion capable of producing viable offspring may not be much more than half this figure. There was also a suggestion that an increase in radiation dose might decrease this proportion.

TIEN-HSI CHENG, FREAR, D. E. H. & ENOS, H. F., JR. (1958). **The use of treatments containing methoxychlor against biting flies on cattle and the determination of methoxychlor residues in milk.**—*J. econ. Ent.* **51,** 618-623. [Authors' abst. modified.] **1821**

An oil-base spray, containing methoxychlor in combination with Lethane 384, synergized pyrethrins and butoxy polypropylene glycol, was applied daily at the rate of 120 ml. per cow by means of an electric-eye-controlled sprayer. It controlled *Siphona* (*Lyperosia*) *irritans* and *Stomoxys calcitrans* and was more effective than a waterbase spray consisting of methoxychlor and N,N-diethyl-*m*-toluamide. The addition of Thanite to the water-base spray increased its effectiveness. Methoxychlor and Thanite in a water-base spray, applied at the rate of 75 ml. per animal, failed to control *Tabanus sulcifrons, T. giganteus* and *St. calcitrans* satisfactorily, but effectiveness was greatly increased by the addition of butoxy polypropylene glycol. A back rubber impregnated with an oil-base mixture of 1% methoxychlor, butoxy polypropylene glycol and Thanite did not give good control of *S. irritans* and *St. calcitrans* but efficiency improved when the concentration of methoxychlor was increased to 4%. Milk from cows sprayed with the oil-base spray containing 1% methoxychlor had a maximum methoxychlor content of 0·1 p.p.m. with a mean of 0·03 p.p.m. Milk from cows sprayed with water-base sprays for 33 or 66 days had a maximum content of 0·09 p.p.m. with a mean of 0·04 p.p.m. Cows having access to a back rubber treated with 4% methoxychlor had a maximum content of 0·03 p.p.m. and a mean of 0·01 p.p.m. in their milk. Pyrethrins, piperonyl butoxide, butoxy polypropylene glycol, organic thiocyanates, and diethyltoluamide did not affect the excretion of methoxychlor.

DAVIES, M., KEIDING, J. & HOFSTEN, C. G. (1958). **Resistance to pyrethrins and to pyrethrins – piperonyl butoxide in a wild strain of *Musca domestica* L. in Sweden.**—*Nature, Lond.* **182,** 1816-1817. **1822**

This contribution from England, Denmark and Sweden appears to be the first published record of *M. domestica* becoming resistant to synergized pyrethrins in the field. Resistance appeared in Sweden in October, 1957, following the use of the insecticide in late 1956–early 1957. Larvae and pupae were sent to Gt. Britain and Denmark and flies were bred out for testing

by topical application of a 1:10 mixture of pyrethrins plus piperonyl butoxide in acetone. The LD_{50} of the resistant Swedish strains (3·3 μg.) was 11–14 times that of normal Danish flies which had never been exposed to pyrethrins.

After breeding the Swedish strains through seven generations without exposure to insecticides, there was a significant decrease in resistance, but the LD_{50} remained high (2·1 μg.). The Swedish strain was also more resistant to chlorinated hydrocarbons, and to diazinon and parathion, than normal flies.

Resistance appears to have been originally encouraged in Sweden by the widespread use of dusts with a low content of synergized pyrethrins, *e.g.* 0·075% pyrethrins plus 0·6% piperonyl butoxide.—W. N. Beesley.

Ogita, Z. (1958). **A new type of insecticide.**—*Nature, Lond.* **182,** 1529-1530. **1823**

The author had already shown that strains of *Drosophila melanogaster* resistant to DDT, BHC, parathion and other insecticides were susceptible to phenylthiourea, while most strains susceptible to DDT were resistant to phenylthiourea. It had seemed likely that the dominant gene which confers resistance to DDT, BHC and parathion, also confers abnormal susceptibility to phenylthiourea; and that the dominant gene which confers resistance to nicotine sulphate, also confers resistance to phenylthiourea.

It is now suggested that a mixture of DDT, BHC or parathion with phenylthiourea might fail to produce resistant flies even after continous use. A strain resistant to DDT and nicotine sulphate was crossed with a strain susceptible to DDT and nicotine sulphate; F_2 larvae were bred on media containing DDT and phenylthiourea and the numbers of surviving flies noted. Results indicated that this type of mixed insecticide has a marked toxicity even on flies showing resistance to many kinds of insecticide.

—W. N. Beesley.

Goulding, R. L. (1958). **Sheep ked control in Oregon farm flocks.**—*J. econ. Ent.* **51,** 585-587. [Author's abst. modified.] **1824**

Sheep ked was controlled by 1·5% dieldrin dust at rates of about 2 ounces a head by means of a hand-operated rotary duster. Mingling of treated and untreated flocks reduced the effectiveness of treatment, but the presence of 3 or 6 untreated sheep could be tolerated. Season of the year had no effect on treatment. Under Western Oregon management conditions, treatment in autumn after the last fat lamb has been sold will minimize residues in slaughter lambs.

Hughes, L. E. & Philip, C. B. (1958). **Experimental tick paralysis in laboratory animals and native Montana rodents.**—*Proc. Soc. exp. Biol., N.Y.* **99,** 316-319. **1825**

Tick paralysis was suspected in rabbits and g.pigs in 1938 when partially fed female *Dermacentor andersoni* which had caused fatal paralysis in one host produced similar effects on other small animals if transferred within 24 hours. Present work showed that wild-caught ticks which had half fed on, and produced paralysis in, dogs, also produced paralysis in hamsters when allowed to continue feeding [for technique, see *V.B.* **4,** pp. 358–359]. Fatal paralysis was usually produced in small animals when the ticks were still only half replete. Male ticks, either initially fed on, or transferred from, paralysed hamsters, caused no paralysis during prolonged attachments on young hamsters. Experimental clinical symptoms of paralysis are described. There were no gross lesions and no infectious agent was recovered, although [*V.B.* **13,** 1144] a toxic principle has been demonstrated in the eggs of *D. andersoni*. Laboratory strains of *D. andersoni*, *D. variabilis*, *Rhipicephalus sanguineus* and wild *D. occidentalis* did not cause paralysis in hamsters.

—W. N. Beesley.

Whitehead, G. B. (1958). **Acaricide resistance in the blue tick,** *Boophilus decoloratus* **(Koch). — Part I.**—*Bull. ent. Res.* **49,** 661-673. [Author's summary modified.] **1826**

Adult *B. decoloratus* ticks from two farms in the East London district were 3–4 times more tolerant of sodium arsenite than were sensitive ticks from a farm near Johannesburg. Both larval and adult ticks from East London were, compared with Johannesburg ticks, highly resistant to γ BHC, with cross-resistance to toxaphene, chlordane, dieldrin and aldrin. Ticks from one of the East London farms were also highly resistant to DDT, with cross-resistance to Dilan. Malathion and diazinon were equally effective against all ticks.

Hart, C. B. & Malone, J. C. (1958). **The occurrence of the rabbit fur mite,** *Cheyletiella parasitivorax* **(Megnin, 1878) on the dog.**—*Vet. Rec.* **70,** 991-993. [Authors' summary.] **1827**

Infestation of 4 dogs with a predatory mite, *Cheyletiella parasitivorax* Megnin, is recorded and concurrent lesions of 5 human beings associated with these dogs are described.

The probability of the mite being capable of living a parasitic existence is briefly discussed.

See also abstr. **1697** (mosquitoes as transmitters of brucellosis); **1800** (Melophagus ovinus as vector of Q fever); **1974** (report, Australia).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

HOVORKA, J. & CHLEBOVSKÝ, O. (1958). K vekovej a sezónnej dynamike fasciolózy oviec. **[Fascioliasis in sheep in relation to age and season.]** — *Sborn. čes. Akad. zemědělsk. Věd.* **3 (31),** 935-946. [In Slovak. Summaries in English, German and Russian.] **1828**

The authors examined at monthly intervals over a period of one year a total of 1,481 sheep livers. Both incidence and intensity of fascioliasis increased with age but the highest relative increase was during the second year of life. In the lowlands of Slovakia incidence was highest in March and lowest in July, in mountainous areas highest in December and lowest in August. It was stated that the optimal time for anthelmintic treatment with hexachloroethane is late in autumn, after the sheep are brought in for the the winter, and again in spring two weeks before they are put out on pasture. Housing for the winter prevented dissemination of ova and was an important control factor.—E.G.

MITTERPÁK, J. (1958). Profylaktická dehelmintizácia, základ bojа s fasciolósou domácich zvierat. **[Control of fascioliasis with combinations of chlorinated hydrocarbons.]** — *Sborn. čes. Akad. zemědělsk. Věd.* **3 (31),** 981-992. [In Slovak. Summaries in English, German and Russian.] **1829**

Fascioliasis was successfully treated in 4,477 sheep by s/c doses of 1 ml./25 kg. body wt. of carbon tetrachloride, given simultaneously with oral doses of 4 g./25 kg. body wt. of hexachloroethane. The advantage of this method over independently applied anthelmintics was that it destroyed immature flukes. Details were given of comparative results obtained in 9,952 sheep with hexachloroethane, carbon tetrachloride, a carbon tetrachloride–filicine compound and a filicine benzene compound, given independently.—E.G.

SCHOFIELD, F. D. (1959). **The schistosomal complement-fixation test. I. The diagnostic value. II. Value as a test of cure.**—*Trans. R. Soc. trop. Med. Hyg.* **53,** 64-70 & 70-74. [Author's summaries modified.] **1830**

I. The schistosomal c.f. test is a good diagnostic test in man for recently acquired infections. It becomes increasingly unreliable for infections of more than 3 years' duration. It was negative in 55% of proved *S. mansoni* infections that could have been acquired more than 10 years previously. These findings have relevance to the evaluation of c.f. test antigens, and to the use of the test in endemic areas. It is possible that repeated schistosomal re-infection may be closely related to the occurrence of negative c.f. test results.

II. The clinical aspects of the use of the schistosomal c.f. test in the follow-up of treated human patients were studied. The test may remain positive for many months in patients judged to be cured on the absence of live ova at follow-up. Where the test does become negative the time of its reversion may be much delayed and even when the reversion occurs it cannot, on the evidence at present available always be confidently ascribed to radical cure.

In cases where previous treatment had not prevented the subsequent demonstration of live ova no increased evidence of negative c.f. test results was apparent.

Immediately after 30 gr. of sodium antimony tartrate had been administered a positive c.f. test appeared in a small group of cases where it had been negative before treatment; in some it became negative again within 6 months, but in one case it was still positive 5 years after treatment. In another small group of proved cases with a negative c.f. test some positive and some negative results were found 1–3 years after the same treatment. In a third group of negative cases that were given only 20 gr. of sodium antimony tartrate no c.f. test changes were found. In all these cases there was no risk of re-infection after treatment and no live ova were found at follow-up. Hypotheses which might explain these findings were discussed.

EZZAT, M. A. E., TADROS, G. & HALIM, M. I. (1958). **Human schistosomes and other trematodes in sea-lions, *Zalophus californianus* from Giza Zoological Gardens.** — *Bull. Minist. Agric., Egypt No.* 285. pp. 25. [In English. Summary in Arabic.] **1831**

In four sea-lions which died successively within a short time, P.M. and histopathological examinations revealed that the primary cause of death was a heavy infestation of schistosomes producing acute lesions. The trematodes found were *Heterophyes heterophyes* in the small intestine, *Schistosoma mansoni* and *S. haematobium* crowded in the blood vessels of the internal organs especially the mesenteric veins, and *Zalophotrema hepaticum* in the bile ducts.

The first three trematodes had not previously been recorded from this mammal.

Pollution of water by schistosome cercariae is discussed and prophylactic measures described.

The viability of ova stored in faeces of these animals was studied.

Animals susceptible to *S. mansoni* and *S. haematobium* infection are enumerated.

The authors conclude that the infection arose as a result of fouling of canal waters in the zoo by human excreta. Steps were taken to avoid a recurrence.—R. N. FIENNES.

VAN OVERBEEK, J., HUGHES, W. J. & BLONDEAU, R. (1959). **Acrolein for the control of water weeds and disease-carrying water snails.** — *Science* **129,** 335-336. [Authors' abst. modified.] **1832**

Addition of acrolein to irrigation canals killed submersed weeds, thereby reducing flow resistance and increasing capacity. In a 20-mile canal, 150 gal. of acrolein increased the water-carrying capacity from 311 to 552 cu. ft./sec. Acrolein also effectively eradicated aquatic snails; it promises to become useful in the control of schistosomiasis.

URQUHART, G. M. (1958). **The production of experimental cysticercosis in calves in Kenya.** —*Bull. epiz. Dis. Afr.* **6,** 385-393. [Summary in French. Author's summary modified.] **1833**

Forty-six calves, from a few hours to seven days old, were reared at the laboratory under conditions designed to prevent accidental infection with *T. saginata* eggs.

All were experimentally infected at ages ranging from 1–95 days with thousands of *T. saginata* eggs and were examined P.M. 11–28 days later.

About half the calves were considered to be resistant to infection (numbers of *C. bovis* cysts recovered ranging from 0–100); in the remaining calves hundreds to thousands of cysts were observed. Ability to resist infection appears to be associated with either the presence of small numbers of large cysts whose size and degree of development indicate infection prior to the experimental exposure (the possible source of this "pre-infection" is discussed), or an innate individual resistance not associated with previous infection.

Resistance to experimental infection does not seem to be influenced by the presence or absence of colostrum in the post-natal diet of the calf.

T. saginata eggs obtained (1) from the terminal segments of a tapeworm expelled from a patient by mepacrin therapy, and (2) from the sewage works, were shown to be infective.

GEMMELL, M. A. (1958). **Hydatid disease in Australia. III. Observations on the incidence and geographical distribution of hydatidiasis in sheep in New South Wales.**—*Aust. vet. J.* **34,** 269-280. **1834**

The results are based upon examination of the livers of 374,165 sheep, and show that the incidence hydatidiasis is high in the north and south of N.S.W. but declines towards the centre and the west. The mean incidence for all classes of sheep was 11·6% and was lowest in lambs. 64·3% of properties had one or more infested sheep but fewer had infested lambs. In more than 50% of 128 properties the incidence was light or medium, *i.e.*, up to 20% of sheep infected, and in only 13 of these properties were more than 30% of sheep infected.

It is believed that geographical variation is explicable neither by differences in rates of stocking nor by differences in husbandry. A high incidence may be anticipated where the rainfall exceeds 1 inch per month and the mean maximum monthly temperature is below 80°F. for at least 4 to 6 months.—R. I. SOMMERVILLE.

LAMMLER, G. (1958). Die Chemotherapie der Trichuriasis. Untersuchungen an experimentell mit *Trichuris vulpis* infizierten Hunden. **[Chemotherapy in experimental *T. vulpis* infestation in dogs.]**—*Z. Tropenmed. u. Parasit.* **9,** 204-212. [Summary in English.] **1835**

Doses totalling 300–340 mg./kg. body wt. of *p*.-glycolylamino-phenyl-arsonic bismuth, given over periods of up to four days to 32 dogs experimentally infested with *Trichuris vulpis*, were effective and well tolerated.—E.G.

BURCH, G. R., MAYER, K. & EHRENFORD, F. A. (1958). **Clinical treatment of canine whipworm by intravenous medication with phthalofyne (Whipcide).**—*Allied Vet.* **29,** No. 6. pp. 10-15. [Authors' summary modified.] **1836**

The i/v administration of a 25% solution of phthalofyne ("Whipcide") was effective against canine whipworms. Of 345 dogs dosed one or more times at the rate 0·45 ml. (112·5 mg.) per lb., 321 or 93% were treated successfully. In 24 cases previous oral treatment with phthalofyne had been unsuccessful.

LEVINE, N. D., HATFIELD, E. E., MACK, R. M. & SCHAEFFLER, W. (1959). **The ineffectiveness of hygromycin against gastrointestinal nematodes of sheep.** — *J. Amer. vet. med. Ass.* **134,** 82-83. [Authors' summary modified.] **1837**

Feeding 16 g. of hygromycin per ton of food to 10 lambs for 3½ months from January to mid-April had no effect on *Strongyloides papillosus, Haemonchus contortus,* and other gastro-

intestinal nematodes. Three of the treated lambs and one of 10 controls died from parasitism and pneumonia. The surviving treated lambs gained an average of only 1·9 lb. during the period, while the surviving controls gained an average of 36·3 lb.

POYNTER, D. & HUGHES, D. L. (1958). **Phenothiazine and piperazine, an efficient anthelmintic mixture for horses.** — *Vet. Rec.* **70,** 1183-1188. [Authors' conclusion modified.] **1838**

Administration of a mixture of piperazine and phenothiazine to horses gave better results against *Strongylus vulgaris* and *S. edentatus* than either anthelmintic alone.

POYNTER, D. (1958). **The anthelmintic properties of hygromycin B in horses.**—*Vet. Rec.* **70,** 865-869 & 870. [Author's summary.] **1839**

The addition of Hygromycin B to the diet of horses at the level of 30 grammes per day resulted in a gradual suppression in strongyle egg production.

CAUTHEN, G. E. & LANDRAM, J. F. (1958). **The effect of experimental infection with *Ostertagia ostertagi* and *Trichostrongylus axei* in calves on weight gain, feed consumption, and feed utilization.**—*Amer. J. vet. Res.* **19,** 811-814. **1840**

Experimental infections were established with *O. ostertagi, T. axei* and a mixture of both in worm-free calves, 9 months old, and observations made on weight gain, food consumption and food utilization, comparisons being made between a four week pre-infection period, a three week prepatent period and a five week patent period. Calves receiving a good ration and infected with 224,000 larvae of *O. ostertagi,* 448,000 larvae of *T. axei* or 111,000 larvae of *O. ostertagi* together with 224,000 larvae of *T. axei* showed no change in weight gain, food intake or food utilization during an eight week post-infection period. Of four calves given a million larvae of *T. axei* and fed a ration of 11% digestible protein (D.P.) and 65% total digestible nutrients (T.D.N.) one showed clinical and three subclinical parasitism. Infected calves lost 0·4 lb. and food intake was reduced 43%. Food utilization was 0·16 lb. per pound in four non-infected and −0·06 lb. in the infected animals. Of four calves given one million larvae of *T. axei* and fed a ration of 7% D.P. and 65% T.D.N., two showed clinical and two subclinical parasitism. Infected calves lost an average of 0·03 lb. daily and food intake was reduced 29%. Food utilization was 0·1 lb. per pound of food in four non-infected calves and −0·07 lb. in infected ones.—T. E. GIBSON.

TROMBA, F. G. & DOUVRES, F. W. (1958). **Cross transmission of nematodes of domestic animals. I. Experimental infection of swine with *Trichostrongylus colubriformis*.** — *Amer. J. vet. Res.* **19,** 918-920. **1841**

Twenty-four pigs ranging in age from 26 to 116 days were given orally 2,900–114,600 infective larvae of *T. colubriformis* in single doses. 19 became infected, it being found impossible to infect pigs older than 78 days. Pigs up to 49 days could invariably be infected. Diarrhoea occurred 7–21 days after infection and persisted for 3–5 days in 13 pigs. The effect on growth rate was variable. In pigs 31 or 39 days old the rate of growth was depressed but in pigs 46 days old no significant effect was apparent. The recovery of worms varied from less than 1% to 68% of the larvae administered. As the infection progressed some diminution in the number of worms recovered was observed. Pathological changes were slight; the effects produced by *T. colubriformis* in pigs are similar to those already described as occurring in goats, differing mainly in degree.

—T. E. GIBSON.

ROSS, J. G., LEE, R. P. & ARMOUR, J. (1959). **Haemonchosis in Nigerian zebu cattle : the influence of genetical factors in resistance.**—*Vet. Rec.* **71,** 27-31. [Authors' summary modified.] **1842**

In an investigation into poor post-weaning performance of zebu cattle near Zaria, Nigeria, evidence of genetically controlled resistance to haemonchosis in one bull line is demonstrated. The influence of resistance on faecal egg counts, blood values, serum protein values, and weight gains is described. The effects of inbreeding, environment, and age on resistance are discussed.

VEGORS, H. H., SMITH, W. N., BAIRD, D. M., CIORDIA, H., BIZZELL, W. E. & SELL, O. E. (1958). **Phenothiazine treatment of yearling beeves on winter pastures.** — *Amer. J. vet. Res.* **19,** 805-810. **1843**

Winter grazing tests were made for three years to determine the value of phenothiazine treatment for the control of nematode infestation in yearlings. Two or three pasture types were used each year and two groups of animals were grazed on each pasture. One group was treated with phenothiazine at intervals during the experiment and in two years had continuous access to mineral licks containing 1:12 pheno-

thiazine to minerals and in the third year had continuous access to a mixture of 1 : 9 phenothiazine and minerals. The other group received minerals only. The effect of the treatment was assessed by the weight gain, monthly faecal egg counts and P.M. examination for determinations of the faecal worm burden of a proportion of the animals. Herbage samples from the pasture were examined for nematode larvae. The conclusions were briefly as follows: phenothiazine licks or mineral mixtures were not of economic value. The nutritional adequacy of pastures of oats and rye-grass or crimson clover seemed to influence weight gain more than the anthelmintic or larvicidal effect of the drug. Only a subclinical level of parasitism was present in these cattle so the effect of the drug could not be ascertained. Combined low-level and therapeutic administration of phenothiazine reduced the number of larvae on the herbage and reduced the worm burden if the daily intake per animal was at least 2 g. and therapeutic treatment was carried out at least twice during the winter and spring grazing period. Although the number of parasitic larvae of stomach worms was reduced by treatment, particularly when the daily intake was higher than 2 g., the type of pasture grazed seemed to be more closely correlated with the number of parasitic larvae of the stomach worms which were found P.M.—T. E. Gibson.

Gordon, H. McL. & Sommerville, R. I. (1958). **New records of nematode parasites in Australia.**—*Aust. J. Sci.* **21,** 148-149. **1844**

The following nematode parasites are recorded for the first time in Australia: *Nematodirus abnormalis* from sheep; *N. helvetianus* from cattle; *Mastophorus muris* from a domestic cat and an unidentified species of mouse.

—A. Culey.

Supperer, R. (1958). Über die in der Aussenwelt ablaufende Entwicklungsphase von *Bunostomum phlebotomum* (Railliet 1900), (Nematoda, Ancylostomidae). [**The free-living developmental phase of *Bunostomum phlebotomum.***]—*Wien. tierärztl. Mschr.* **45,** 553-560. [Summaries in English, French and Italian.] **1845**

In a laboratory experiment ova of *Bunostomum phlebotomum* hatched after 24–30 hours; the optimum temp. was 30°C. At 40°C. embryos developed but did not hatch. At 25°C. embryonic development took 48 hours. First stage larvae measured 420–510 μ. About 12 hours after hatching they moulted for the first time but did not cast the cuticle. They increased in length by 50 μ. Second ecdysis took place 12–14 hours later, the third stage larvae again retaining the cuticle, which, together with the first, enclosed the larvae in two sheath-like covers. Third-stage larvae measured 540–580 μ. No food was consumed during the free-living phase. Third-stage larvae were easily distinguishable from those of other nematode parasites of cattle by the clearly differentiated glandular and muscular parts of the oesophagus.—E.G.

Dow, C., Jarrett, W. F. H., Jennings, F. W., McIntyre, W. I. M. & Mulligan, W. (1958). **Use of X-irradiated larvae for immunisation of dogs.**—*Vet. Rec.* **70,** 999. **1846**

In canine hookworm (*Uncinaria stenocephala*) infections it is possible to induce immunity by the administration of X-irradiated third stage larvae. Six dogs were vaccinated with 1,000 larvae subjected to 40,000 r. After 128 days these and 6 controls were given 1,000 normal infective larvae. All were killed 22 days later. The mean number of worms in the control group was 530 and in the vaccinates 32. The efficacy of a double vaccination procedure is being tested.

Kovermann, B. (1957). Beitrag zur Behandlung der Lungenwurmerkrankung des Rindes mit Aerosolen. [**Aerosol treatment of lungworms in cattle.**] — *Inaug. Diss. Hanover* pp. 76. **1847**

A high percentage of cures was claimed in 869 cattle infested with lungworms, using an aerosol inhaler and two proprietary chenopodium oil preparations. Treatment was from 8 to 12 min. according to severity of infestation. Details were also given of aerosol treatment in 106 cattle with colloidal iodine compounds, an antimony preparation, a piperazine compound, a proteolytic enzyme, and others.—E.G.

Allan, D. (1959). **A field study of a natural outbreak of parasitic bronchitis in calves.** — *Brit. vet. J.* **115,** 19-26. [Author's summary modified.] **1848**

An attempt was made to utilize experimental methods in a field study of a natural outbreak of parasitic bronchitis. Larval counts and estimations yielded data which were assessed with clinical observations in the light of farming methods practised in a typical dairy farm in Northern Ireland.

Mackenzie, A. (1958). **Studies on lungworm infection of pigs. I.—Observations on natural infection. II.—Lesions in experimental infections.**—*Vet. Rec.* **70,** 843-845 & 846; 903-906.

[Author's summary and conclusions modified.] **1849**

I. Observations were made in a herd of pigs free from virus pneumonia. An analysis of the infestation in pigs that had access to an infected pasture indicated that a high incidence could occur even where the degree of infection was low. Pigs of the store and pork groups were on average about 3 times more heavily infected than bacon pigs, following exposure to lungworm larvae before weaning.

Lungworms and the lesions attributable to them were usually located in the posterior parts of the diaphragmatic lobes of the lungs but occasionally in the heavier infections areas of consolidation were produced in the anterior lobes and had to be differentiated from the lesions of virus pneumonia.

II. Using scaled doses of viable infective lungworm larvae the extent of the infection and of the lesions were directly related to the infective dose. There was a pattern of the location of lungworms in the lungs and of the emphysema and pulmonary consolidation produced. Clinical manifestations of disease were produced only in heavily infected pigs. The microscopic changes in the early patent period of the disease differed from those in the end-stages and indicated a dynamic progressive reaction to the presence of the parasites.

KNAPP, S. E. (1958). **An anthelmintic study of carbon disulfide and sulfur-35-labeled carbon disulfide on *Ascaridia galli* and its host.**—*Dissertation, Kansas St. Coll.* pp. 107. [Abst. from abst. in *Diss. Abstr.* **19**, 393-394. (1958).] **1850**

Experiments were performed on the nematode and on fowls with carbon disulphide labelled with radiosulphur. The most efficient dose for removing *A. galli* was 0·35 ml. but this was not effective against larval stages. The anthelmintic entered the worm through its cuticle. Radiosulphur was identified in 22 tissues of fowls 48 hours after oral administration, with highest conc. in the gall bladder. Expelled worms contained an average of 0·087 μg. of radiosulphur.—R.M.

LAVOIPIERRE, M. M. J. (1958). **Studies on the host-parasite relationships of filarial nematodes and their arthropod hosts. II. — The arthropod as a host to the nematode: a brief appraisal of our present knowledge, based on a study of the more important literature from 1878 to 1957.**—*Ann. trop. Med. Parasit.* **52**, 326-345. [Author's summary modified.] **1851**

A brief appraisal is made of the arthropod as an intermediate host of the filarial parasite. The uptake, development and deposition of filarial nematodes by the arthropod is discussed. A short account is given of the effects produced by the nematode parasite on the arthropod host and by the host on the parasite.

KADENATSII, A. N. (1957). [***Setaria marshalli* infection in sheep.**]—*Trud. Omsk. vet. Inst.* **15**, 137-141. [In Russian.] **1852**

A nervous disease of sheep, with symptoms resembling those of coenurus infestation, was attributed to infestation of the brain with this nematode. 70–75% of sheep with the acute form of the disease died. The parasite was of common occurrence in the abdominal cavity of cattle but no nervous signs were observed in cattle. Infestation was transmitted experimentally by feeding infected mosquitoes on calves, lambs and young goats: adult nematodes did not appear in the abdominal cavity until 8–10 months after infection. Some of the experimental lambs and goats developed nervous symptoms similar to those seen in field cases.—R.M.

HUQ, M. M., HUSSAIN, Z. & ANSARI, M. Y. (1957). **Humpsore in cattle.** — *Proc. 9th Pakistan Sci. Conf., Peshawar* 1957. Part III. pp. 131-133. **1853**

Hump sore could not be established by allowing flies which had previously fed on a sore to feed on scarified areas of hump, nor by rubbing in scrapings from lesions or emulsions of flies which had fed on sores. Intravenous inoculation of filariae of *Stephanofilaria assamensis* also failed to establish the condition. Hump sore could be reproduced only by implantation of live filariae on artificial wounds of the hump. —R.M.

See also abstr. **1892** (necrotic hepatitis, rickettsiosis and fascioliasis in sheep). **1974** (report, Australia).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

RICHTER, W. R. (1958). **Adrenal cortical adenomata in the goat.**—*Amer. J. vet. Res.* **19**, 895-901. **1854**

Tumours, described as adenomas for reasons given, were found in adrenals taken during P.M. examination of 831 clinically normal goats, mostly over 4·5 years of age: there were 188 males, 208 females and 435 castrated males. Most of the lesions were in the outer cortex, or just beneath the capsule, and were mostly so

small as to be unrecognized until microscopic examination (carried out on a total of 1,287 adrenals) was made. The adrenals of 113 goats were involved: in 55, the adenomas were under 2 mm. in diam. (in stained section); in 36 they measured 2 to 5 mm.; and in 22, 5 to 11 mm. In 50 goats, the lesions were single (more may have been present but not sectioned), while in 63 goats the tumours were multiple, being present in both right and left glands in 58 goats.

The histological structure and development of the lesions are described in detail.

The sex distribution of these adrenal cortical adenomas showed important differences between males (no adenomas in 244 glands) or females (2 adenomas in 273 glands) and castrated males (adenomas in 169 of 770 adrenals). The significance of this finding is indicated.

—E. COTCHIN.

MICHALSKA, Z. & MICHALSKI, Z. (1958). **W sprawie nowotworów grasicy u zwierząt i własny przypadek grasiczaka kozy. [Tumours of the thymus in domestic animals. Thymoma in a goat.]** — *Weterynaria, Wroclaw* No. 4. pp. 163-169. [In Polish. Summaries in English and Russian.] **1855**

A review of the literature and a description of a thymoma in a 5-year-old goat. The tumour was about 10 x 8 x 7 cm. and weighed 260 g. There were no metastases.—M. GITTER.

SCHULZ, K. (1958). **Multiple acanthoma in the skin of pigs.**—*S. Afr. med. J.* **32,** 1215. [Author's abst. modified.] **1856**

The outbreak seemed to be unique and had not been observed or described before in veterinary literature. The disease was confined to pigs on one farm and was neither infectious nor contagious. The primary lesion (histologically) was a focal dermititis crustosa which eventually developed into an acanthoma. Of the 3 pigs kept under observation, metastasis was observed in most of the superficial regional lymph-nodes of one pig; in another the lymph nodes were involved to a lesser extent and those of the remaining one were not visibly affected.

VON SANDERSLEBEN, J. (1958). Über epitheliale Neubildungen in der Haut des Hundes. **[Epithelial neoplasms in the skin of dogs.]**—*Berl. Münch. tierärztl. Wschr.* **71,** 287-290. [Summary in English.] **1857**

The author discussed incidence and pathogenesis of rarer types of epithelial skin tumours in dogs. He described two calcified and three keratinized epitheliomata, and compared them with similar tumours in man.—E.G.

LIVINGSTON, W. S. (1958). **The treatment of spontaneous tumours of the dog and cat with filtrate from a tissue lysate.**—*J. nat. Cancer Inst.* **20,** 245-307. **1858**

L. observed a marked regression of spontaneous benign and malignant neoplasms in dogs and cats treated with a filtrate prepared from human placental tissue, ground and suspended in saline and incubated at 40°C. in a pressure chamber at a pressure of 25 lb. from 6 weeks to 3 months. The active principle of the filtrate was not identified. Effectivity of filtrates varied from batch to batch, but filtrate prepared from sterilized tissue was ineffective. Twenty-three selected case histories are given in detail.—E.G.

KRUL, J. & GRÉZL, V. (1958). Příspěvek k výskytu a klasifikaci nádorů u drůbeže. **[Occurrence and classification of tumours in fowls.]**—*Sborn. čes. Akad. zemědělsk. Věd.* **3 (31),** 785-802. [In Czech. Summaries in English and Russian.] **1859**

Of 53 fowls with neoplasms 30 had leucotic tumours, 11 adenocarcinoma, 5 leiomyoma, 4 spindle-cell sarcoma, 2 sarcomatous fibroma, one a carcinoma, one a mixed epithelial–connective tissue tumour, one a haemangioma, and one an organized haematoma. There are 85 references and 8 photographs of lesions.—E.G.

BANG, F. B. & HALEY, R. (1958). **Appearance and disappearance of antibodies to Rous virus in normal chickens.**—*J. nat. Cancer Inst.* **20,** 329-338. **1860**

Rous sarcoma antibodies were demonstrated in five of nine fowls, six months old, without lesions. Only one of the five reactors, however, yielded a positive titre six months later. Chicks from the same flock, kept under constant observation, did not develop tumours, but antibodies were demonstrable in the yolks of the eggs from this flock. Of 12 chicks kept together with their infected parents, three yielded positive and four doubtful reactions at 6 months of age. None, however, maintained the titre.—E.G.

LIESEGANG, M. (1958). Einige seltenere Gehirntumoren bei Tieren. **[Some rare brain tumours in animals.]**—*Berl. Münch. tierärztl. Wschr.* **71,** 208-211. [Summary in English.] **1861**

Following a brief review of the literature, L. gave details, with photomicrographs, of a medulloblastoma in the pontine region of a Boxer dog, a papillary tumour involving the chorioid plexus in a Chow, and a unilateral neuroma of the acoustic nerve in a cow.—E.G.

BARUAH, B. D. (1958). **Plasma cells and tumour growth.** — *Nature, Lond.* **182,** 1455-1456. **1862**

A histological and cytological study was made of the local, regional (lymph node) and remote (spleen) cellular response (particularly plasma cells) to transplanted and induced tumours in rats during the stages of progressive growth and of induced inhibition and regression. The findings suggested "that the increased response of plasma cells is the morphological manifestation of a systemic immune reaction to circulating antigen(s), which leave the graft, and reach the regional lymph nodes and spleen, where they excite this reaction, like any other antigens, and that plasma cells are involved in the production of antibodies".—E. COTCHIN.

HADDOW, A., DE LAMIRANDE, G., BERGEL, F., BRAY, R. C. & GILBERT, D. A. (1958). **Anti-tumour and biochemical effects of purified bovine xanthine oxidase in *C3H* and *C* mice.** —*Nature, Lond.* **182,** 1144-1146. **1863**

The growth of spontaneous mammary tumours in C3H and C^+ (high-tumour strain) mice was arrested by i/p injections of xanthine oxidase prepared from cow's milk, growth being resumed on cessation of the injections. There was an accompanying increase of xanthine oxidase in the liver and in the tumours in treated mice.

I/p inj. into $C-$ (low-tumour strain) mice of xanthine oxidase caused a proportional increase in the liver levels of this enzyme. Inj. of inactivated enzyme preparations also caused a rise of liver enzyme, but occurring later and to a lesser degree, suggesting that it was reactivated in the liver. Supernatant solution, prepared by immersing active enzyme soln. in a boiling-water bath for 5 min. and decanting the clear soln., or bovine albumin, or a combination of both these, had no such effect. The possible meaning of these observations is discussed.

—E. COTCHIN.

SCHLUMBERGER, H. G. (1958). **Effect of radiothyroidectomy in the parakeet.**—*Arch. Path.* **66,** 747-753. **1864**

In the parakeet destruction of the thyroid by I^{131} or interference with the production of thyroxin by the administration of thiouracil leads to changes in pituitary cytology and to hyperplasia of the gland. But no pituitary tumours were induced, and the high incidence of spontaneous pituitary tumours in this bird cannot be accounted for by any pituitary–thyroid imbalance.—R.M.

NUTRITIONAL AND METABOLIC DISORDERS

—. (1958). **Control of diseases in cattle and sheep at pasture.** pp. 160. Paris: The European Productivity Agency of the Organisation for European Economic Co-operation. [Project No. 204.] **1865**

This publication contains 7 papers which were discussed at a meeting of the European Productivity Agency at Utrecht in September, 1957. The titles of the papers are:— Prevention of parasitic diseases among sheep and cattle at pasture, by J. Euzéby; Metabolic disorders, by J. H. Bouckaert & A. T. Phillipson; Nutrition tetany, by L. Seekles; Mineral deficiencies, by R. Allcroft; Relationship between mineral composition of pasture and grass tetany and other mineral disorders, by J. Wind; Sterility among grazing animals, by P .C. Hignett & J. Moustgaard; Poisons on pasture originating from industry and pest control, by K. Wagener & U. Reuss.—R.M.

GILKA, F. (1958). Příspěvek k diagnostice meningoencephalitis eosinophilica u prasat. **[Diagnosis of eosinophilic meningo-encephalitis in pigs.]**—*Sborn. čes. Akad. zemědělsk. Věd.* **3 (31),** 253-262. [In Czech. Summaries in English, German and Russian.] **1866**

Eosinophilic meningoencephalitis, a non-infectious disease due to nutritional, possibly toxic factors, formed about 2% of all inflammatory conditions of the c.n.s. in pigs in Czechoslovakia. Sodium chloride poisoning was excluded. In 39 pigs the disease was associated with a ration containing a certain proportion of brewers' grains. Other pigs fed a similar diet, but less brewers' grains, remained healthy.

—E.G.

HANKIN, L. (1958). **Filicidal cannibalism by female albino rats.** — *J. Nutr.* **66,** 377-382. [Author's summary modified.] **1867**

3% of liver added to a stock diet significantly lowered the incidence of cannibalism; 1% was insufficient. The addition of either one or 3% of whole liver powder to the mothers' diet significantly increased weights of the young rats at weaning.

HANKA, L. J. & LOCKHART, W. R. (1958). **Determination of diethylstilbestrol in feed**

supplements by microbiological assay. — *Antibiot. & Chemother.* **8**, 584-589. [Summary in Spanish p. 598. Authors' summary modified.] **1868**

The specific inhibition of a strain of *Staphylococcus aureus* by diethylstilboestrol was used as a basis for microbiological assay of this compound in feed supplements. A parallel-line disk plate assay was developed that can detect differences of 7 to 10 μg./ml. between samples.

TULBAEV, P. (1958). **[Factors which initiate rumination in young ruminants.]** — *C. R. Acad. Sci. U.R.S.S.* **123**, 377-380. [In Russian.] **1869**

5 goats were offered concentrates and roughage from between 12 and 18 days of age, while others were given only milk for the first 2–3 months. The first signs of rumination (regurgitation of liquid and "smacking" of the lips) was observed 8–12 days after birth. 5–8 days after being given roughage for the first time rumen contractions became rhythmical and they gradually assumed the adult pattern.—R.M.

HUTCHINSON, K. J. (1958). **Factors governing faecal nitrogen wastage in sheep.**—*Aust. J. agric. Res.* **9**, 508-520. **1870**

Two factors, total nitrogen and dry matter (d.m.) intake, account for a large part of the variation in faecal nitrogen.

Analysis of 44 observations from sheep fed on five "nitrogen-free" diets showed that the regression of metabolic faecal N on intake of d.m. had a significant intercept of +0·70 g. per day. The expression of metabolic faecal N estimates in terms of unit intake will thus lead to errors which would be important with the low levels of intake frequently associated with unpalatable "nitrogen-free" diets. When an allowance is made for the small quantities of N contained in these diets there is excellent agreement between observations from different sources.

In a group of data from two sources, of pasture diets covering a wide range of N intakes, high correlations were recorded between total faecal N and intake of d.m. However, a positive effect of N *per se* was shown where N intake was less than 8 or more than 45 g. per day.

These findings are discussed with reference to the applicability of faecal N index methods which have been proposed for the calculation of grazing intake and the assumption that the metabolic component of total faecal N is constant.—R. L. REID.

NAGÓRSKI, F. & JOSZT, B. (1958). Zatkanie jelita ślepego u koni i ich leczenie. **[Treatment of caecal impaction in horses.]**—*Méd. vét., Varsovie* **14**, 470-472. [In Polish.] **1871**

The treatment varied according to the type of impaction. When the contents were soft the authors used 8–10 litres of 5% sodium sulphate by stomach tube twice daily, adding 150–200 g. of yeast with the second application and injecting 20 ml. atropine s/c. When the contents were hard 2 kg. of liquid paraffin were given with the first application of sodium sulphate and 1 kg. with the second; in dehydrated animals 500 to 1,000 ml. of 5% glucose and caffeine should also be given, i/v. In cases which fail to respond to treatment sodium sulphate or 200–300 ml. of warm liquid paraffin can be injected into the caecum either directly through the abdominal wall or through the rectum (16 horses were treated in this way and all responded well). The authors treated successfully 140 out of 154 cases of caecal impaction (*i.e.*, 91·9%).—M. GITTER.

SCHUMACHER, E. & HULFTEGGER, E. (1958). Über die Wirkung des Scharfen Hahnenfusses auf den ph-Wert und die Gasgärung im Panseninhalt und auf die Automatie der überlebenden Pansenwand des Rindes. 3. Beitrag zur Kenntnis des Typus *Ranunculus acer* L. **[Action of crowfoot (*Ranunculus acer*) on pH and gas formation in rumen contents, and on contractions of isolated rumen wall.]**—*Schweiz. Arch. Tierheilk.* **100**, 415-427. [Summaries in English, French and Italian.] **1872**

Fresh crowfoot sap appeared to have no effect on pH of rumen contents but dried, powdered material increased its acidity. Both fresh and dried crowfoot stimulated, but steam distillate inhibited, fermentation of rumen fluid. In isolated rumen strips contraction was inhibited by distillate of either fresh or powdered material.—E.G.

STALLCUP, O. T. & LOOPER, C. G. (1958). **Ammonia formation in the bovine rumen with various diets.**—*J. agric. Food Chem.* **6**, 916-919. [Authors' summary modified.] **1873**

Although the release of ammonia from a proprietary mixture of cane molasses, urea, ethyl alcohol, phosphoric acid and trace minerals is rapid and is similar to that from urea, the danger of alkalosis may be lessened by the buffering action of phosphoric acid which keeps the pH near 7. The release of ammonia from cotton-seed meal, soya bean meal, and cotton-seed husks was very small. The high protein content of rumen liquor when soya bean meal is fed may indicate some special advantage for this food in the diet of ruminants.

RAKHMANOV, A. M. (1958). **[Amyloidosis in ducks reared and fattened on poultry farms.]** —*Arkh. Pat.* **20,** No. 11. pp. 59-62. [In Russian. Summary in English.] **1874**

Amyloidosis was present in up to 45% of ducks fattened under an intensive system of management. It was found as early as 10–15 days of age in ducklings which died from paratyphoid. The commonest location of amyloidosis was the spleen (in 97% of cases), with liver (66%) and kidney (21%) next.—R.M.

MUNSON, T. O., HOLZWORTH, J., SMALL, E., WITZEL, S., JONES, T. C. & LUGINBÜHL, H. (1958). **Steatitis ("yellow fat") in cats fed canned red tuna.**—*J. Amer. vet. med. Ass.* **133,** 563-568. **1875**

Four cases are reported in young spayed female cats of nutritional steatitis due to feeding a high proportion of canned red tuna fish. Loss of appetite and rise in temp. were accompanied by lethargy resulting from pain in the affected areas, *i.e.*, the fat of thorax and abdomen, and the subcutaneous, intrathoracic and intra-abdominal fat. Prominent lab. findings were elevated leucocyte count, neutrophilia and varying degrees of eosinophilia. Microscopic and macroscopic findings are given and illustrated. The best treatment seemed to be 27 mg. of alpha tocopherol daily, supplemented by cortisone in cases accompanied by eosinophilia.

—IRENE M. DIXON.

SIDRANSKY, H. & FARBER, E. (1958). **Chemical pathology of acute amino acid deficiencies. I. Morphologic changes in immature rats fed threonine-, methionine-, or histidine-devoid diets. II. Biochemical changes in rats fed threonine- or methionine-devoid diets.** — *Arch. Path.* **66,** 119-134 & 135-149. **1876**

Lesions were induced in the liver of rats force-fed diets free from threonine and histidine. Lesions on diets free from methionine were less obvious. When fed the same diets *ad libitum*, less food was consumed and there were no specific lesions. The difference was apparently due to the lower food consumption. The lesions were characteristic of kwashiorkor.

—D. S. PAPWORTH.

ARCHIBALD, J. G. (1958). **Trace elements in milk: A review—Parts I & II.** — *Dairy Sci. Abstr.* **20,** 712-725 & 800-812. **1877**

The evidence in the literature indicates that 26 trace elements are probable or definite constituents of milk. A definite statement on the average amounts in "normal" cows' milk is warranted for only 10 of these. Expressed as p.p.m. of liquid milk, these are: As, 0·05; B, 0·2; Co, 0·001; Cu, 0·13; F, 0·15; I, 0·04; Fe, 0·45; Mn, 0·03; Mo, 0·05; and Zn, 3·7. Human milk appears to be richer in trace elements than cows', ewes' or goats' milk. Except for copper and iron, the effect of feeding supplements of specific elements or feeds rich in them is to increase the amount of the element in cows' and ewes' milk. Trace elements probably exist in milk linked in organic complexes, perhaps chelated, and the concentration of some is higher in the fatty than in the solids-not-fat portion.—A. ACKROYD.

LINE, C., HEAD, M. J., ROOK, J. A. F., FOOT, A. S. & ROWLAND, S. J. (1958). **Investigations into the use of supplements for the control of hypomagnesaemia in dairy cows during the spring grazing period.**—*J. agric. Sci.* **51,** 353-360. [Authors' summary modified.] **1878**

A daily supplement of 2 oz. calcined magnesite either contained in 2 lb. of dredge corn cubes or 4 lb. dredge corn mix, or as a drench, gave adequate protection against the development of hypomagnesaemia in the fifty-six cows to which it was given. The supplements of 3½–4 lb. linseed cake and 12,500 i.u. vitamin D gave only partial protection.

PEERS, F. G. & ARMOUR, J. (1958). **Hypomagnesaemia in calves in Nigeria.**—*Vet. Rec.* **70,** 912-913. [Authors' summary modified.] **1879**

In three cases in Nigeria the symptoms and analytical data accorded well with those of calf hypomagnesaemia in temperate climates. Grass tetany in adult cattle has not been found.

MOORE, P. A. (1958). **Molybdenum content of equine liver tissue.** — *Nature, Lond.* **182,** 1175-1176. **1880**

The Mo content of 125 samples of adult horse liver was determined. In 109 it lay between 3 and 19 p.p.m., but in 5 it was 42, 47·6, 54·8, 76·4 and 84·6 p.p.m. The ash content of these 5 was normal. It is suggested that Mo may accumulate in the liver with age.—M.G.G.

KÖVES, J. (1958). A szopósmalacok vérszegénysége, megelőzése és gyógyítása. **[Prevention and treatment of anaemia in piglets.]** — *Mag. állator. Lapja* **13,** 212-216. [Summaries in English and Russian.] **1881**

In a series of experiments on Large White piglets to compare the antianaemic effect of a British ("Imferon") and a Hungarian iron–dextran preparation, results of repeated r.b.c. counts and haemoglobin estimations showed that

both preparations injected i/m on the 5–10th day after birth were readily absorbed, gave a considerable rise in the Hb content of the blood, and furnished 4–5 weeks' supply of iron to the piglets.—A. SEBESTENY.

SCHOOP, G. & ZETTL, K. (1958). Über die Wirkung von Myofer, einem injizierbaren Eisenpräparat (Eisendextrankomplex) auf die Entwicklung von Ferkeln. **[Action of an injectable iron dextran complex on the growth of piglets.]**—*Mh. Tierheilk.* **10,** 218-229. **1882**

The experiments were carried out in 38 litters from seven piggeries, comprising 391 piglets. Average weight at four weeks of age of 184 piglets, injected s/c when three days old with 2 ml. of an iron dextran compound, containing 50 mg. Fe/ml., was 5·32 kg., as compared with 4·23 kg. of controls. At eight weeks respective weights were 13–19 kg. and 11·03 kg. Relative gains were highest in piggeries feeding a diet low in animal protein, but reaction to the preparation varied markedly within piggeries and litters and even between litter mates. About 17% of the piglets died during the first three days of life. Further losses up to the age of 56 days amounted to about 11%.—E.G.

WILKIE, W. J. & BUSSELL, B. W. (1958). **Parakeratosis in pigs.**—*Aust. vet. J.* **34,** 172-178. **1883**

An outbreak of parakeratosis in South Australian pigs responded quickly to low doses of zinc. The condition was reproduced in pigs fed zinc-free diets supplemented with 2 to 2·5% calcium. The higher calcium diet produced earlier evidence of parakeratosis.

The authors recommended that the calcium level should not exceed 1% and 200 p.p.m. zinc should be added.

An additional important finding was that marked growth response to zinc supplementation occurred in pigs which showed no clinical signs of parakeratosis.—L. N. LOOMIS.

MICHNA, A., NEUMANN, H.-J. & KLAUS, W. (1958). Untersuchungen über die Verträglichkeit mit dem Futter verabreichter Zinksulfatmengen beim Schwein. **[Tolerance of pigs to dietary zinc sulphate.]** — *Prakt. Tierarzt* No. 8. pp. 244-246 & 248. **1884**

Nine pigs receiving daily doses of up to 44 g. each of zinc sulphate amounting to up to 3·3% of the ration, for 104 days did not develop clin. signs of poisoning, although P.M. the mucous membranes of the digestive tract were inflamed. The surplus zinc was not stored in blood and muscles, nor was the blood picture affected. Since food containing amounts of zinc sulphate large enough to be toxic was unpalatable, poisoning with therapeutic mixes against parakeratosis appeared unlikely.—E.G.

HURLEY, L. S., EVERSON, G. J. & GEIGER, J. F. (1958). **Manganese deficiency in rats: congenital nature of ataxia.** — *J. Nutr.* **66,** 309-319. [Authors' summary modified.] **1885**

Female rats maintained from weaning on a manganese-deficient fresh milk ration were able to bear young not differing greatly in number or birth weight from those produced by females receiving a similar diet containing added manganese. Survival of the young was significantly decreased by the deficiency, and most of them exhibited pronounced ataxia, with lack of equilibrium, head retraction and tremor.

Manganese supplementation begun on or before the 14th day of gestation was completely effective in preventing ataxia in the young. When managanese was withheld until the 18th day of gestation (but continued thereafter) survival was low, and all of the surviving young were ataxic.

KRÜGER, L. & KIRCHBERG, K. (1958). Der Einfluss differenzierter Vitamin-A-Gaben auf das Wachstum und die Gesundheit von Leghornhähnchen. **[Influence of varying doses of vitamin A on growth and health in cockerels.]** — *Arch. Geflügelk.* **22,** 266-272. [Summary in English.] **1886**

Three groups each of 98 newly hatched cockerels were given diets supplemented with 8,000, 7,000 and 4,000 i.u. of vitamin A per kg. food, respectively. After eight weeks, differences in weight gain in the first two groups were insignificant, but chicks in the third group were about 6% lighter. Losses in the first two groups amounted to 1%, in the third to 7%. —E.G.

REID, R. L. (1958). **The nutritional physiology of the ewe in late pregnancy.**—*J. Aust. Inst. agric. Sci.* **24,** 291-295. **1887**

Nutritional, environmental, metabolic and anatomical factors influencing the ewe in late pregnancy are discussed. Inadequate information is available on the feed requirements of pregnant ewes. End-products of carbohydrate digestion in ruminants are not sugars, as in man, but volatile fatty acids. Glucose to meet c.n.s., peripheral and foetal demands is formed from propionate in the liver. The ovine foetus grows extremely rapidly in the last two months of gestation and

heavy demand for maternal glucose may exceed the supply especially where there is twinning or the ewe is undernourished. Developing foetuses and, possibly, abdominal fat may restrict rumen volume and food intake. Adrenal activity increases in pregnancy and undernourishment primes the adrenal cortex to react excessively to stress. Ewes with pregnancy toxaemia have raised levels of plasma hydrocortisone and it is clear that environmental stress is a critical factor in the disease. Adrenal steroids have been shown to cause wool "break" and severe undernourishment may produce sufficient adrenal activity to give a partial or complete "break" as in pregnancy toxaemia. Neonatal losses are greater in lambs from undernourished ewes and such losses are increased by climatic stress.

—C. H. GALLAGHER.

FORD, E. J. H. (1959). **Metabolic changes in cattle near the time of parturition. I. Hepatic fat and alkaline phosphatase activity of liver homogenates.**—*J. comp. Path.* **69,** 20-28. [Author's conclusions.] **1888**

There are no significant changes in serum bilirubin, serum alkaline phosphatase or in the dry matter of the liver of cattle at parturition.

The protein content of the liver in the period 21 to 40 days after calving is slightly higher than in the 40 to 21 days before calving. The alkaline phosphatase activity of liver homogenate is significantly higher in the first 20 days after parturition than in the later stages of pregnancy and there is a significant fall as lactation proceeds.

Stainable fat appears in hepatic cells in the first five weeks of lactation and is removed as lactation proceeds.

The mechanism of these changes is discussed and increased pituitary-adrenal activity at parturition is suggested as a possible cause.

TODD, J. R. (1958). **An experiment on bovine ketosis using two different types of silage.**—*Brit. vet. J.* **114,** 414-418. [Author's summary.] **1889**

An experiment is described in which changing six cows from a grass silage to a grass and clover silage for one week resulted in an increase in the blood ketone body content of five of them. Two clinical cases developed. In the remaining 30-odd cows in the herd which remained on the grass silage, only one milk ketone body titre was detected.

Low temperature fermentation in the grass and clover silage, resulting in a predominance of butyric and acetic acids with no lactic acid, is suggested as a possible explanation.

THIN, C., PAVER, H. & ROBERTSON, A. (1959). **The metabolism of ketone bodies in the ruminant.**—*J. comp. Path.* **69,** 45-64. [Authors' conclusions modified.] **1890**

The administration of acetone, acetoacetate and isopropanol separately to the ruminant, by mouth or intravenously, was found to produce a transient form of ketonaemia.

A high degree of interchange occurred between these ketone bodies in the blood, tissues and rumen. The rumen appeared to be the main, if not the only, site of formation of isopropanol.

The administration of β-hydroxybutyrate produced no ketones and this fraction appeared to be the end-point of inter-ketone body conversion.

A cycle of events is suggested for the metabolism of the ketone bodies in the blood and tissues and in the rumen.

The chemical form of ketonaemia obtained in the ruminants subjected to frequent administrations of a ketone body is compared with clinical ruminant ketosis and that produced by starvation in the ruminant.

See also abstr. 1721 (nutrition and susceptibility in mice to bacterial infections); 1974 (report, Australia).

DISEASES, GENERAL

DEMCHUK, M. V. (1957). **[Partial electrocardiography in some diseases of cattle.]** — *Sborn. Rabot Leningrad vet. Inst.* No. 20. pp. 135-145. [In Russian.] **1891**

In addition to the established standard or 'complete' leads I, II and III, D. employed the 'partial' leads IV and V, where one lead is placed on the chest wall and the other is placed either on the right foreleg or left hindleg. The 5 methods were compared in 5 cows with myocardial degeneration, one with pericarditis, one with endocarditis and 2 with pneumonia. It was concluded that the 'partial' leads could yield valuable additional information about the functional state of the heart.—R.M.

CVJETANOVIĆ, V., BERBEROVIĆ, M. & MATANOVIĆ, D. (1958). Hepatitis infectiosa necroticans i latentne ricketsioze aktivirane metiljavošću kod ovaca u Livanjskom Polju. **[Infectious necrotic hepatitis and latent rickettsiosis activated by fluke infestation in sheep.]**—*Veterinaria, Sarajevo* **7,** 51-56. [In Croat. Summary in English.] **1892**

Of about 20,000 sheep in Yugoslavia, 1,400 fell ill in the summer of 1957. Of these about 1,000 died, all of which were over 12 months old and infested with liver fluke. Death appeared to be due to two distinct infections, both activated by acute fascioliasis. Some of the sheep died suddenly with hardly any clin. symptoms. P.M. findings included congestion and yellowish-grey discoloration of the liver, with fluke migration tracks clearly visible, and excess fluid in the serous cavities. *Clostridium oedematiens* was regarded as the primary cause of death. Symptoms of the other condition were more distinct and included convulsions which preceded death. P.M. there was enlargement of spleen and lymph nodes, and haemorrhages in heart, larynx, trachea and abomasum. Pleomorphic inclusion bodies resembling rickettsia were demonstrated in the endothelial cells.—E.G.

GLAZIER, D. B. (1958). **A study on the electrocardiogram of the horse.**—*Thesis, Cornell* pp. 100. **1893**

Full justice to the extensive and detailed observations here reported cannot be given in a short abstract.

It is concluded that electrocardiography is of definite value, and that no examination for soundness is complete until such examination has been made. While the procedure is generally simple, it does not always give a clear-cut answer. In arrhythmias and blocks it provided a specific and irrefutable answer, but in myocardial disease it is much less specific. It cannot be overemphasized that the e.c.g. should always be read in the light of clinical observation.

—H. L. GILMAN.

GOODWIN, R. F. W. (1958). **Acute circulatory failure in a herd of pigs.**—*Vet. Rec.* **70,** 885-887. [Author's summary modified.] **1894**

A herd of pigs is described in which fatal heart failure became a problem among the fattening stock. No errors of nutrition or management could be found that might have given rise to the disease.

I. COSSARD, J. (1957). La myopathie exsudative et dépigmentaire du porc. **[Exudative depigmenting myopathy of pigs.]** — *Thesis, Paris (Alfort)* pp. 58. **1895**

II. HENRY, M., ROMANI, J.-D. & JOUBERT, L. (1958). La myopathie exsudative dépigmentaire du porc. Maladie de l'adaption. Essai pathogénique et conséquences pratiques. **[Exudative depigmenting myopathy of pigs.]** —*Rev. Path. gén.* **58, 355-395.** Discussion: 395-398. [Summaries in English and Spanish.] **1896**

I. C. coined the term 'exudative depigmenting myopathy of pigs' to describe a condition seen in slaughtered pigs characterized by absence of rigor and a flaccid, watery and pale musculature. A similar condition has been described by Dutch workers as "Enter disease" [*V.B.* **24,** 2445 & 3235]. It differed from the watery flesh of fevered carcasses. Affected muscle had an abnormally high acidity, normal water content, absence of adenosine triphosphate, low sodium content and increased intracellular potassium. The meat was usually condemned.

II. Studies on Na and K metabolism and urinary excretion of corticosteroids were performed on 12 castrated pigs, kept in metabolism cages for a week before slaughter. The myopathy was found in 4 of the pigs. It was concluded that exudative depigmenting myopathy arose as a result of failure of the rapidly-growing pig to adapt itself to stress, which in the authors' experiments was confinement in a cage.—R.M.

SOVA, Z. & BLAŽEK, K. (1958). Biochemické a histopatologické nálezy při myositidě u psů a výraznou krevní eosinofilií. **[Biochemistry and histopathology in eosinophilic myositis in dogs.]** — *Sborn. čes. Akad. zemědělsk. Věd.* **3 (31),** 835-844. [In Czech. Summaries in English, German and Russian.] **1897**

Of 2,258 dogs examined at a veterinary hospital, ten were affected with eosinophilic myositis involving the temporal and masseter muscles. Case histories of five of them, all Alsatians, some of them with relapses, were described. Examination was carried out during the acute oedematous stage and during muscular atrophy. There was an increase in blood proteins and beta globulin. Histologically there was cellular infiltration near degenerated muscle fibre bundles and formation of collagenous connective tissue. The course of the disease was not influenced by antihistamines, antibiotics, vitamins or calcium. [See also *V.B.* **28,** 231.]

—E.G.

VAUGHAN, L. C. (1958). **Studies on intervertebral disc protrusion in the dog. III. Pathological features.**—*Brit. vet. J.* **114,** 350-355. [For part I, see *V.B.* **28,** 3360.] **1898**

In 32 spines examined P.M., 67 protrusions were found; 66 were dorsal and one ventral. Of the dorsal ones only 2 were small and of type II (annulus and dorsal spinal ligament intact and little damage to spinal cord); the rest were large and of type I (annulus and dorsal spinal ligament ruptured with resultant epidural haemorrhage and interference with the cord). Both

types may co-exist in one cord. Most (31%) of the protrusions were in the thoraco-lumbar junction region.

Macroscopic lesions of protrusion type I are described: sagittal sections cut by the Gough–Wentworth technique are often necessary to find the track the nuclear material had traversed. The protruded material often adheres to the dura mater. Macroscopic lesions of type II are correspondingly slight (no changes in the nucleus itself, and perhaps rupture of a few fibres only of the annulus).

Eight cords were stained by Weil's method: in half of them the cord had been destroyed beyond recognition at site of protrusion. Gliosis of grey and white matter and demyelination were common. Obliteration of the ventral spinal artery is important. Meninges were thickened in affected areas and some leptomeningitis existed in cases where myelography with Lipiodol had been carried out. This leptomeningitis probably produced no untoward sequelae in most cases, but in a Dachshund multiple cysts occurred in the whole circumference of the cord. The most extensive destruction of the cord was found in dogs dead from ascending paralysis.

Signs and symptoms can be roughly correlated with the lesions, but there is some individual variation.—Irene M. Dixon.

Eliot, T. S., Jr., Eliot, F. P., Lushbaugh, C. C. & Slager, U. T. (1958). **First report of the occurrence of a neonatal endocardial fibroelastosis in cats and dogs.**—*J. Amer. vet. med. Ass.* **133,** 271-274. **1899**

This disease was identified in a 2-month-old kitten and a 4-month-old dog. The kitten, one of a litter of 8, was the last to die: all "faded". The dog died after 10 days of progressive symptoms of cardiac failure. Prominent P.M. findings in both were dilated and hypertrophied heart, particularly the left ventricle, and aortic stenosis. The endocardium of the left ventricle was thickened and opaque. Photographs included are sections of left ventricular wall of kitten, dog, and of a human case with a similar condition. Causes are discussed including heredity.
—Irene M. Dixon.

Levine, P. P. (1958). **Case report — Round heart disease in the United States.** — *Avian Diseases* **2,** 530-536. [Author's summary modified.] **1900**

The first cases of round heart disease in the U.S.A. are reported. Three outbreaks, two on the same farm in successive years, are recorded from New York State. One affected flock was divided into two pens. One pen served as a control, while the other received food and water from new sources. Mortality from round heart disease was 23% in the control pen and 10% in the other pen. Eighty birds from the affected flock were moved to a pen with clean litter near the laboratory; none died from round heart disease. An attempt to reproduce the disease in normal chickens by keeping them on litter from the affected pen failed.

Hicks, A. F., Jr. (1958). **Genetic resistance to uric nephritis in chickens.**—*Poult. Sci.* **37,** 1289-1294. [Author's summary modified.] **1901**

In the 1952–53 laying year uric nephritis occurred in 9·5% of the pullets of five different breeds of ckickens and represented 29·6% of the total mortality. Statistically significant differences in the incidence of nephritis were observed between breeds and between sire families within three of the five breeds.

From 1953 to 1957 the incidence of nephritis in adults was 3·4% accounting for 16·0% of all deaths and significant differences between and within breeds did not occur.

Palmer, R. F., Thompson, R. C. & Kornberg, H. A. (1958). **Factors affecting the relative deposition of strontium and calcium in the rat.** — *Science* **128,** 1505-1506. [Authors' abst.] **1902**

Varying the calcium, phosphorus, carbonate, and lactate content of the diet was shown to affect the deposition in bone of Sr^{89} to a degree quite different from concurrent effects on Ca^{45} deposition. The influence of these findings on the evaluation of the Sr^{90} fallout hazard is discussed.

See also abstr. **1687 1688** (oedema disease); **1976** (book, diseases of laboratory animals); **1977** (book, radiation hazards and protection).

POISONS AND POISONING

Brüggemann, J., Bronsch, K., Karg, H. & Dahme, E. (1958). Pathophysiologische Studien und klinische Beobachtungen zur Dürener Krankheit. **[Physiopathological studies and clinical observations on Düren disease (trichlorethylene poisoning).]** — *Zbl. VetMed.* **5,** 634-664. [Summaries in English, French and Spanish.] **1903**

Düren disease, also known as Brabant disease, Stockman's disease or aplastic anaemia

[*V.B.* **22,** 3813], the main feature of which is anaemia associated with haemorrhages from mucous membranes, particularly of nose and anus, was produced experimentally in 15 adult cattle and 6 calves, fed over a period of 37 days supplements of trichlorethylene-extracted soya bean meal, totalling 37–128 kg., according to milk yield. Sixteen cows in comparable stages of lactation or pregnancy, fed a similar ration but supplemented with petrol-extracted meal, remained healthy. Trichlorethylene-extracted meal was, however, harmless for sheep, goats, pigs, chicks, rabbits, g.pigs and rats. In the bone marrow of affected cattle development of promyelocyte and megakaryocyte systems was inhibited, which resulted in reduction of the number of circulating granulocytes, and in thrombocytopenia, damage to the vascular intima followed by increased permeability, and consequently anaemia. Attempts to cure the condition failed. Some animals died 42 days after discontinuation of feeding trichlorethylene-extracted meal. The toxic principle was transmissible from dam to foetus.—E.G.

Oksamitnyĭ, N. K. & Vlasov, A. T. (1958). **[Mass poisoning of pigs with ustilaginous fungi.]** — *Veterinariya, Moscow* **35,** No. 10. p. 83. [In Russian.] **1904**

Pigs of various ages were fed the smut-infested tips of maize cobs. Those 2–4 months old developed convulsive fits, conjunctivitis, and pneumonia. The cobs were rendered harmless by steaming.—E. L. Urch.

Knott, S. G., McCray, C. W. R. & Hall, W. T. K. (1958). **Selenium poisoning in horses in North Queensland.**—*Qd J. agric. Sci.* **15,** 43-58. [Authors' summary modified.] **1905**

A disease of horses in Cape York Peninsula known locally as "change hoof disease" is described.

The gross pathology is similar to that reported in selenium poisoning.

Levels of selenium in organs and tissues are comparable with those found in selenized horses in the U.S.A. and Ireland. Selenium contents of 2·6, 12·0, 6·0 and 6·8 p.p.m. respectively were found in the liver, mane, tail, and hoof of one horse, and the mane and tail of another contained 2·5 and 1 p.p.m. selenium respectively.

The selenium content of the incriminated plant, *Morinda reticulata,* varied from 1·5 to 1·141 p.p.m. dry matter—generally well in excess of the minimum required to cause chronic selenosis.

The feeding of 138 lb. of *M. reticulata,* containing 13·3 g. Se, to a horse over an 82-day period caused lameness and loss of hair. Samples taken P.M. showed 9·8 p.p.m. Se in the liver and the following levels in hair grown during the trial:– body hair 11·2, mane 19·4 and tail 45·4 p.p.m.

Ibragimov, K. Z. & Lebedev, A. S. (1958). **[Experimental poisoning of sheep with *Trichodesma incanum.*]**—*Veterinariya, Moscow* **35,** No. 10. p. 81. [In Russian.] **1906**

T. incanum seeds were included in the diet of 5 sheep at dosages of 0·05–0·4 g./kg. body wt. for up to 1½ months without causing toxic symptoms. Three gave birth to healthy lambs. Two sheep fed 1–2 g./kg. for 15–20 days were severely poisoned and died 25–45 days after feeding began. Clinical symptoms, blood picture, and P.M. findings are described.

—E. L. Urch.

Pyörälä, K., Seppälä, T. & Punsar, S. (1959). **Effect of corticoids, adrenocorticotrophic hormone, thyroxine, and thyrotrophic hormone on aortic lesions in experimental lathyrism.**—*Acta path. microbiol. scand.* **45,** 37-48. [In English. Authors' summary modified.] **1907**

Cortisone acetate, given to rats in daily dosage of 0·25 mg. per animal, suppressed all the alterations of the aortic media caused by the toxic lathyrus factor. Deoxycortone acetate, in a daily dosage of 0·5 mg. per animal, caused a slight increase in the metachromasia and periodic acid–Schiff reaction of the ground substance, but dissecting aneurysms were not observed. Corticotrophin in a daily dosage of 1 i.u. had no definite effect, but thyroxine in a daily dosage of 0·25 mg. had a strong inhibitory effect.

Boyd, E. M., Jarzylo, S., Boyd, C. E. & Cassell, W. A. (1958). **The chronic oral toxicity of spiramycin in dogs.**—*Arch. int. Pharmacodyn.* **115,** 360-371. **1908**

Spiramycin administered by mouth in daily doses of 0·5 g./kg. body wt. for 8 weeks produced systemic toxaemia in 10 dogs and 8 of them died.—R.M.

See also abstr. **1974** (report, Australia); **1975** (report, New Zealand).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

MIYA, F., MARCUS, S. & THORPE, B. D. (1958). **Effect of properdin on whole body irradiated mice and rats.**—*Proc. Soc. exp. Biol., N.Y.* **99,** 757-761. [Authors' summary modified.] **1909**

Post-irradiation treatment of mice and rats with partially purified bovine properdin and purified human properdin administered i/p or i/v did not afford protection against the effects of whole body X-irradiation. There appeared to be a relationship between delayed mortality and time of injection.

RASMUSSEN, F. (1958). **Mammary excretion of sulphonamides.**—*Acta pharm. tox., Kbh.* **15,** 139-148. **1910**

Experiments were performed on 7 cows and 3 goats, all clinically normal. The ratio between the concentration of non-acetylated sulphonamide in ultra filtrates of milk and plasma, between 30 and 240 min. after i/v inj., varied from one compound to another, but was constant for a given compound. The ratios were as follows: sulphanilamide 0·97, sulphadimidine 0·59, sulphathiazole 0·35, sulphadiazine 0·21 and sulphacetamide 0·08. It was probably the un-ionized portion of the sulphonamides, not bound to protein, which established diffusion equilibrium between plasma and milk.—R.M.

HANSEN, L. H. (1958). Undersøgelser over promazinderivatet "Plegicil" til svin. **[Trials with the promazine derivative "Plegicil" in pigs.]** — *Medlemsbl. danske Dyrlaegeforen.* **41,** 331-338. **1911**

In healthy sows and gilts restrained by a snout rope the drug was injected i/v at the rate of 10 ml. in the course of one min. A dose of 0·25–0·5 mg. per kg. body wt. resulted in superficial sedation in about 10 min. With 0·5 to 0·7 mg./kg., sedation of medium depth was obtained after 5 min., lasting for 1–1½ hours or more. With 0·7–1·4 mg./kg., medium to deep sedation occurred quickly and lasted for 2–2½ hours; the animal could be roused to apparently full consciousness and could usually walk if helped to its feet. Body temp. fell by 2° to 2·5° in 2–3 hours, with a steady decrease in respiration and pulse rates. In two of three cases for caesarian section a satisfactory deep sedation with good relaxation of the abdominal wall was obtained; the dosage could be increased by one-third without risk. In the third case (in better general condition) only superficial to medium depth of sedation of very short duration was obtained, even with increased dosage. The drug was a useful adjunct to local anaesthesia. It is suggested that it would also be useful, *e.g.* in cannibalism and for symptomatic treatment of eclampsia and cramps of other origin.—F.E.W.

SCOTT, W. A. (1958). **Induction of anaesthesia using pentobarbitone intra-thoracically.** — *Vet. Rec.* **70, 774.** **1912**

S. describes his single-handed method of injecting pentobarbitone into cats and small dogs with a half inch 24-gauge needle.

—IRENE M. DIXON.

LIEBERMAN, L. L. (1958). **An ultra short-acting anaesthetic.**—*Vet. Med.* **53,** 601-603. **1913**

Methitural is reliable for i/v and possibly slightly less so for i/p injection in dogs and cats. Its short action is due to the more rapid removal from circulation, most of the dose being absorbed by depot fat within 30 min., some being degraded by the liver. After 24 hours only about 30% of the dose remains in the carcase, as compared with 90% in the case of thiopentone sodium. This rapid degradation and detoxification prevents some of the post-anaesthetic depression; there is negligible respiratory depression. Peculiarly prolonged analgesic after-effect is of advantage. Rapid i/v inj. is essential; the pupillary reflex test is more useful than the pedal reflex. Combination with pre-anaesthetic medication or pentobarbitone sodium works well. Seven case reports in dogs and cats (both sexes, up to 3 years) are presented.

—IRENE M. DIXON.

See also absts. **1692** (biomycin in pullorum disease of chicks); **1699** (brucellosis); **1714** (effect of antibiotics on anthrax spores); **1730** (in vitro resistance of PPLO to antibacterial agents); **1733** (antrycide); **1734 & 1737** (prothidium, suraminates of ethidium and RD 2902); **1735-1736** (ethidium bromide-suramin complex); **1738** (compound 12,065); **1741** (coccidiosis); **1742-1743** (theileriasis); **1978** (books, new and nonofficial drugs).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

TALANTI, S. (1958). **Histochemical investigations on the renal function in the cow foetus.** —*Brit. vet. J.* **114,** 374-376. **1914**

The presence of uric acid was used as an index of kidney function and sections of kidney tissue removed from 23 foetuses, varying in length from 10 to 83 cm., were stained to demonstrate this substance. Crystals were found in all the tissue investigated, mainly confined to the tubules. The amount appeared to increase

with the age of the foetus, suggesting increased secretion by the kidney. The correlation of foetal renal function with the development of the hypothalamic–hypophyseal neurosecretory system was discussed.—JOYCE E. HAMMANT.

GAZARYAN, K. G. (1958). **[Morphological differentiation of sexual glands in the early embryogenesis of Karakul sheep.]** — *C. R. Acad. Sci. U.R.S.S.* **123**, 948-951. [In Russian.] **1915**

Differentiation of the gonads commenced on the 34th day of development.—R.M.

CORNELIUS, C. E., BISHOP, J., SWITZER, J. & RHODE, E. A. (1959). **Serum and tissue transaminase activities in domestic animals.** —*Cornell Vet.* **49**, 116-126. [Authors' summary modified.] **1916**

Serum glutamic-oxaloacetic transaminase (SGO-T) and glutamic-pyruvic transaminase (SGP-T) activities were determined for normal horses, cattle, calves, pigs, dogs, and fowls. Tissue analyses were made for glutamic-oxaloacetic (GO-T) and glutamic-pyruvic transaminase (GP-T) activities. Considerable GO-T activity was found in almost all tissues analysed in each species, but high GP-T activity was found only in canine liver. After the administration of CCl_4 and during the subsequent hepatic necrosis significant elevations in SGO-T activity were found in the horse, cow, pig and dog, but marked elevations of SGP-T activity were confined to the dog.

MEDWAY, W. (1958). **Water metabolism in the domestic fowl.** — *Thesis, Cornell* pp. 110. **1917**

The metabolism of water by the growing female White Leghorn was studied, using birds 1–32 weeks of age to include the down stage, adolescence and sexual maturity. The study included determination of the total body water directly by desiccation and indirectly by the antipyrine dilution technique, the blood and plasma volume, haematocrit, the specific gravity of the blood and plasma, and the plasma water. The extracellular space was also determined and in conjunction with previously mentioned studies the interstitial and intracellular spaces were calculated. The water intake was measured as well as output and the water balance established.—H. L. GILMAN.

STEPANKINA, M. K. & TASHENOV, K. T. (1958). **[Water metabolism in the camel.]**—*Sechenov J. Physiol.* **44**, 991-996. [In Russian.] **1918**

A camel aged 5 years, having a chronic duodenal anastomosis and parotid fistulas, was studied during water deprivation. Changes in the pH and water content of chyme, residual and total nitrogen in saliva and chyme, and viscosity of blood and saliva were recorded during 12 or 15 days without water. [An English translation of this journal has been published by the Pergamon Institute, London.] —R.M.

NAUMOV, M. P. (1958). **[Portal vein angiostomy in the calf.]**—*Sechenov J. Physiol.* **44**, 1164-1165. [In Russian.] **1919**

N. briefly described the placing of a stainless steel cannula, 35 c.m. long and 3 mm. internal diam., in the portal vein to enable blood samples to be collected for metabolism studies. —R.M.

ARDRAN, G. M., COWIE, A. T. & KEMP, F. H. (1958). **Further observations on the teat sinus of the goat during suckling.**—*Vet. Rec.* **70**, 808-809. **1920**

An electro-manometer recorded the pressure changes in a polythene tube inserted into the teat sinus during the suckling of a healthy kid. Pressure within the sinus rose to 80–100 mm. Hg as it was compressed by the jaw and tongue, and fell to −40 mm. Hg while the tongue was lowered and the sinus refilled. The pressure at the back of the kid's mouth during this phase, while bottle feeding, was −100 to −300 mm. Hg. The mechanism of sucking therefore consisted of a phase of expression followed by one of suction.—JOYCE E. HAMMANT.

PATYRA, S., KRACZKOWSKI, H. & ZALEWSKI, W. (1958). Wpływ warunków wychowu i wieku na niektóre składniki krwi obwodowej u prosiąt. **[Influence of breeding conditions and the age on some constituents of the peripheral blood of piglets.]**—*Ann. Univ. M. Curie-Skłodowska, Sect. DD.* 1956 **11**, 205-228. [In Polish. Summaries in English and Russian.] **1921**

The studies were conducted on 4 litters of pigs divided into 2 groups of 14 and 15, kept indoors and out of doors. One week after farrowing the number of r.b.c. and the Hb level fall and then gradually increase up to the 6th week; higher levels of Hb and r.b.c. counts were found in piglets kept out of doors. Eosinophiles present on the day of birth are replaced by lymphocytes within the first week of life. The shift towards polymorphonuclear neutrophiles takes place sooner in outdoor pigs. No effect of weaning was noted on the peripheral blood. The authors found that with sudden lowering of temperature and sudden increases in solar radiation the num-

ber of r.b.c. increased and the Hb level rose, while gradual increase in solar radiation caused a rise in the Hb level by greater saturation of r.b.c. with Hb.—M. GITTER.

REDA, H. (1957). **Blood grouping in Egyptian buffaloes.**—*J. Egypt. vet. med. Ass.* October pp. 57-59. [In English. Author's summary modified.] **1922**

62 Egyptian buffaloes were tested for blood grouping by the slide method using human test sera A & B. Results showed that 9 were group A, 17 were group B, 8 were group AB and 28 were group O. The results confirmed the presence of a relationship between buffalo and human agglutinogens.

WELS, A. (1958). Durchmesserbestimmungen an Haustiererythrozyten im Plasma und im Ausstrich. **[Diameter of erythrocytes in domestic animals.]**—*Blut* **4**, 250-253. **1923**

W. compared diameters of erythrocytes in the fresh state and in smears. During the preparation of blood smears, erythrocytes shrank by 0·5–1 μ. Average values for fresh erythrocytes were: horse 6·7 μ, ox 6·7, goat 4·5, dog 7·9.—R.M.

GARTON, G. A. (1959). **The fatty acids of blood.** — *J. Sci. Fd Agric.* **10**, 12-19. [Author's summary modified.] **1924**

For the most part, the fatty acids of blood are present in esterified form. Unesterified fatty acids are found as a very small fraction of the total lipids in most species, but in appreciable amounts in the blood of ruminants. The relative amounts of the different lipid classes in r.b.c. and plasma are discussed and an account is given of the nature of the fatty acids in each class of lipid. Recent investigations on the transport of fatty acids of exogenous and endogenous origin are described and the possible metabolic importance of unesterified, higher fatty acids is discussed.

HAWKER, R. W., ROBERTS, V. S. & WALMSLEY, C. F. (1959). **Oxytocin and oxytocic substance in blood extracts before, and following, copulation in sheep.**—*Endocrinology* **64**, 209-310. **1925**

There is indirect evidence that during natural and artificial insemination of sheep oxytocin is released into the blood. The authors were unable to demonstrate an increase in the concentration of oxytocin in the blood of ewes in natural oestrus, following stimulation by copulation.—R.M.

BAKEEVA, E. N. & UTEKHIN, B. P. (1958). **[Role of the functional state of the gastric glands and their secretory activity in pigs.]** —*Sechenov J. Physiol.* **44**, 1077-1081. [In Russian. Summary in English.] **1926**

The effect of different rations on the secretory activity of the gastric glands was studied in 3 Large White pigs aged 6–7 months, each having a gastric pouch created by gastro-oesophagotomy. Maintenance for a long time on the same ration rendered the gastric glands refractory to the stimulus of a change of food. Thus when beet or pumpkin was added to a grain diet after 2 or 3 weeks on grain alone, there was a delay of 10–15 days before the secretory activity of the gastric glands increased. —R.M.

I. KAY, R. N. B. (1958). **Continuous and reflex secretion by the parotid gland in ruminants.**—*J. Physiol.* **144**, 463-475. **1927**

II. KAY, R. N. B. (1958). **The effects of stimulation of the sympathetic nerve and of adrenaline on the flow of parotid saliva in sheep.**—*Ibid.* 476-489. [Author's summaries modified.] **1928**

I. The secretion of parotid saliva was examined in decerebrate and anaesthetized sheep and in anaesthetized goats and calves.

The secretory innervation consisted of preganglionic fibres in the glossopharyngeal and facial nerves. The post-ganglionic fibres were distributed to the gland in the parotid nerve, a branch of the buccal nerve.

Reflex parotid secretion was caused by: (a) mechanical stimulation of the mouth, the lower thoracic oesophagus, the cardia, the reticulo-omasal orifice and to a less extent the lips of the oespohageal groove, the reticulo-rumen fold and the epithelium of the reticulum; or (b) the introduction of acid into the mouth or rumen.

The afferent fibres concerned coursed from the mouth with the lingual and glossopharyngeal nerves and from the forestomach with the vagus nerves.

Little or no parotid secretion was found in calves less than one month old.

II. Stimulation of the cervical sympathetic nerve accelerated the continuous resting flow of saliva and was followed by a compensatory cessation of flow. It is suggested that this response is due to the expulsion of saliva and that no change in the rate of secretion occurs.

Similar changes in flow followed the injection of oxytocin but not of vasopressin.

The expulsion of saliva is attributed to contraction of the myoepithelial cells of the gland,

which are innervated by post-ganglionic adrenergic sympathetic nerve fibres.

The action of adrenaline depended on the site of injection and the experimental conditions. After section of the secretory nerve to the parotid or the injection of atropine, adrenaline caused an expulsion of saliva similar to that produced by sympathetic stimulation.

With the secretory nerve intact adrenaline caused copious reflex parotid secretion through an action on the afferent limb of a reflex arc, probably by direct excitation of receptors in the forestomach.

Both stimulation of the cervical sympathetic nerve and the injection of adrenaline into the carotid artery reduced parotid blood flow and could depress the rate of secretion.

TALANTI, S. (1958). **Studies on the subcommissural organ in some domestic animals. With reference to secretory phenomena.** — *Ann. Med. exp. Biol. Fen.* **36,** Suppl. No. 9. pp. 97. [Thesis, Helsinki.] [In English. Author's summary modified.] **1929**

The histological structure of the subcommissural organ in the ox, horse, pig and dog and some of its histochemical properties are described. Particular attention is paid to findings that have a bearing on its problematic function.

I. GERWING, J., LONG, D. A. & PITT-RIVERS, R. (1958). **The influence of bacterial exotoxins on the activity of the thyroid gland in different species.** — *J. Physiol.* **144,** 229-242. **1930**

II. GERWING, J. (1958). **The effect of continued toxic stress on the activity of the thyroid gland in the rat and the guinea-pig.** —*Ibid.* 243-249. [Authors' summaries modified.] **1931**

I. A single inj. of bacterial exotoxin depressed the release of ^{131}I from the thyroid gland in the rat, mouse and rabbit, but increased it in the g.pig and Rhesus monkey. A single inj. of thyrotrophin stimulated thyroid function when this had been depressed by the toxin. The hypothesis of a reciprocal relationship between the secretion of corticotrophin and that of thyrotrophin is compatible with the evidence obtained in the rabbit, rat and mouse, but not with that obtained in the Rhesus monkey and g.pig. It is suggested that in the last two, and possibly in man, a raised blood concentration of adrenal steroids does not inhibit thyroid activity. This is attributed to an inherent resistance of these species to the thyroid-inhibiting effect of adrenal steroids.

II. Repeated small doses of exotoxin in rats caused primarily a depression in thyroid function followed by a period of normal thyroid function and finally of overactivity. Such doses in g.pigs caused increasing thyroid overactivity throughout the experimental period.

STOKOE, W. M. (1958). **Observations on the distribution of birefringent crystals in the adrenal gland of the sheep.** — *Brit. vet. J.* **114,** 463-469. [Author's summary modified.] **1932**

The adrenal glands from 12 sheep were treated and examined for birefringent material. The findings were as follows. Optical activity in the adrenal of sheep was confined to the cortex, with four distinct zones:— (1) A subcapsular zone corresponding to the zona glomerulosa. Birefringence is revealed in this zone by a fine scattering of dust-like particles both within the cytoplasm of the cells and in the zonal capillaries. (2) An optically inactive zone corresponding to the zona intermedia. (3) A wide optically active zone corresponding to the zona fasciculata, with birefringent crystals as large, unevenly-shaped globules uniformly distributed, and also the same type of small, intra-cytoplasmic particles as in the outermost zone. (4) An innermost zone corresponding to the zona reticularis containing sparsely distributed large, irregular birefringent crystals.

PALMER, A. C. (1958). **Anatomical arrangement of the grey matter in the medulla, pons and midbrain of the sheep.**—*Zbl. VetMed.* **5,** 953-967. [In English. Summaries in French, German and Spanish. Author's summary.] **1933**

Serial sections were prepared of the medulla, pons and midbrain from 3 normal sheep and the anatomy of the neuronal masses is described and illustrated. The nucleus of Roller, the nucleus of Edinger Westphal and the nucleus of Perlia were not distinguished. The superior vestibular nucleus is short in its rostro-caudal extent.

BLUMBERG, B. S. (1958). **Studies on the biochemical genetics of cattle: The whey proteins and hemoglobins.**—*Proc. Xth int. Congr. Genet., Montreal* **2,** (Absts.) 27. **1934**

African zebu cattle appeared to be unique in having two types of alpha-lactalbumins in milk. The occurrence of two types of haemoglobin in the blood was studied in five breeds: Nigerian zebu, Sudanese zebu, Keteku (zebu cross), Muturu and N'Dama. Only zebu and

Keteku cattle had two types of haemoglobin and it was noted that these two breeds are relatively resistant to trypanosomiasis.—R.M.

TAYLOR, W. H. (1959). **Studies on gastric proteolysis. I. The proteolytic activity of human gastric juice and pig and calf gastric mucosal extracts below pH 5.**—*Biochem. J.* **71,** 73-83. [Abst. from author's summary.] **1935**

Pig and calf gastric mucosal extracts possessed proteolytic properties similar to those of human gastric juice, except that calf extracts digested egg albumen with two maxima.

The proteolytic activity of calf mucosal extracts at pH 3·5 is not caused wholly by rennin, which has a pH maximum in this region, but also by another enzyme which is present in extracts from which rennin has been removed.

SOWDEN, E. & PIRIE, A. (1958). **Barium and strontium concentrations in eye tissue.** — *Biochem. J.* **70,** 716-717. [Authors' summary modified.] **1936**

The Sr and Ba content of the different parts of the eye was estimated in cattle, rabbits, and man by the method of activation analysis. The pigmented parts contain more Sr and Ba than the other parts, and the choroid of the cow has a high concentration of Ba. These findings are discussed in relation to the presence of high concentrations of Zn in the choroidal tapetum lucidum of other animals.

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION.

BRÖNSTRUP, K.-H. (1958). **Die vorzeitige Totenstarre der Schlachttiere als Hinweis auf eine Qualitätsminderung des Fleisches. [Premature rigor of slaughter animals as an indication of poor quality of the carcass.]**—*Arch. Lebensmittelhyg.* **9,** 173-178. **1937**

Recent work on the metabolism of muscle was discussed and the pH of muscle from 167 slaughtered sows was related to onset of rigor mortis and meat quality. When rigor set in early (shortly after death, passing off after 6 hours) the pH averaged 6·3, compared with 6·09 in cases of normal rigor commencing about 4 hours after slaughter. Such meat was of poor quality. —R.M.

SOMERS, R. K. (1958). **Chemical residues in meat.** — *J. Amer. vet. med. Ass.* **133,** 106-107. **1938**

A short exposition on the possible dangers of chemicals added to meat during processing, and risks of consuming meat from animals that may have picked up chemicals from their food or environment. A case is made for increasing specialized organizations, preferably under government control, for the involved microchemical research needed in this analytical field. —D. S. PAPWORTH.

NORWAY. (1957). Norges Veterinaerhøgskole. Beretning for Årene 1. Juli 1953–30. Juni 1957. **[Norwegian veterinary college. Report for the years 1953-57.]** pp. 217. Oslo: Fellestrykk A.S. [In Norwegian.] **1939**

This publication combines 4 annual reports for the period 1953–1957. Apart from administrative matters, there are accounts of research in the departments of anatomy, biochemistry, pharmacology, physiology, breeding, nutrition, pathology, and sexual physiology and sexual pathology. Most of this work has been reported in veterinary periodicals: there are lists of papers contributed by each department. The number of students at the college ranged from 130 to 140. Between 19 and 22 qualified each year.—R.M.

ANON. (1958). Veterinarska služba Jugoslavije u 1957 Godini. **[Yugoslav veterinary services and education, in 1957.]**—*Vet. Glasn.* **12,** 751-816. [In Croat. Summary in English.] **1940**

The Yugoslav veterinary service is headed by the Federal Veterinary Board, an administrative body which co-ordinates the more or less independent Veterinary Boards of the various federal units. The Federal Board is responsible for policy, statistics, control of epizootics, import and export of animals and food of animal origin, legislation, research, appointment of special advisory committees, etc.

In 1957 there were 2,419 veterinary surgeons and 734 veterinary hospitals. Veterinarians employed at hospitals receive in addition to their salaries a percentage of the net income.

Over 56,000 cows were treated for sterility. There were 37 artificial insemination centres with 291 bulls. A.I. was carried out in about 226,000 cows and 770,000 sheep. Dourine, Teschen disease and sheep pox were totally eradicated. There have been no outbreaks of F. & M. disease for three years, but vaccination with a trivalent vaccine was carried out in certain danger areas. Incidence of TB. in cattle was 0·96%. Figures for bovine-type infection in man were not available. Brucellosis occurred in 497 herds

of cattle and 338 herds of pigs. *Br. melitensis* infection was almost completely eradicated. Nearly 640,000 dogs were immunized against rabies. The disease was recorded in 29 dogs and 6 cats and in one human being. Incidence of swine fever was reduced. Newcastle disease remained a serious problem and occurred on over 2,250 farms in 160 localities. Losses due to piroplasmosis and helminth parasites particularly liver fluke, lungworms and cysticercus, were high.

There are five veterinary research institutes, nine bacteriological laboratories, eleven diagnostic stations and four serum institutes employing 28 veterinarians. In the four veterinary colleges there were 66 professors, 53 lecturers and 1,142 students. There is also a school for veterinary technicians.—E.G.

REPRODUCTION AND REPRODUCTIVE DISORDERS

HADEK, R. (1958). **Intraperitoneal insemination of rabbit doe.** — *Proc. Soc. exp. Biol., N.Y.* **99,** 39-40. **1941**

30 rabbits were inseminated, 1–12 hours after mating with vasectomized buck, through the linea alba by means of a 2-inch 14 gauge needle. When killed after 7–10 days, it was found that some blastocysts were obtained from inseminations 8 hours after mating, but good yields only from 1–2 hours. Conception rate (with washed spermatozoa) was higher than other workers have obtained *via* the vaginal route.—F. L. M. DAWSON.

ROBINSON, T. J. (1958). **Studies in controlled artificial insemination of Merino sheep.**— *Aust. J. agric. Res.* **9,** 693-703. [Author's summary modified.] **1942**

A total of 507 ewes were inseminated at the rate of about 100 per day for 5 days, in an experiment with different rams, treatments, days of insemination and volume of semen. Treatments were: (1) control; (2) progesterone daily for 16 days, pregnant mare's serum on 17th, inseminated on teasing; (3) progesterone every 2 days, PMS on 17th, inseminated on teasing; (4) as for (2), but inseminated 2 days after PMS; (5) as for (3), but inseminated 2 days after PMS.

The overall lambing rate was low (31·6%). There were significant differences between rams, treatments, and day of insemination.

Relative infertility of one ram was related to high incidence of spermatozoa with curled tails.

Treatment effects were: (1) 40·8% of ewes lambed; (2) 33·7%; (3) 32·9%; (4) 30·2%; (5) 15·0%. Insemination was less efficient on the first day. Volume of undiluted semen used (0·05 or 0·1 ml.) had no effect.

WILLEMS, C. M. (1959). Kunstmatige inseminatie bij varkens. [**Artificial insemination in pigs.**] — *Tijdschr. Diergeneesk.* **84,** 208-234. [In Dutch. Summaries in English, French and German. English summary modified.] **1943**

An account of experiments to investigate the practical possibility of artificial insemination in pigs. Collecting the semen by use of a dummy and an artificial vagina was feasible. A high pressure in the artificial vagina (shortened model as used for bulls) is essential to induce ejaculation. Certain characteristics of the semen were studied, using 136 ejaculates from 13 boars; the average volume was 176·4ml., The concentration varied markedly between boars and from one ejaculate to another.

Stability of the semen was tested in about ten diluents; skim milk with 10% of egg yolk was one of the most satisfactory. Cooling after dilution did not seem to increase stability, neither did separate dilution of successive fractions (of various concentrations) of an ejaculate.

An insemination-apparatus was designed using measurements of genital organs from 100 sows. It consisted of a bottle provided with a blower and connected to a plastic insemination-pipette by a small plastic tube. The end of the pipette was twisted in the shape of a screw to facilitate passage of a number of cervical folds.

At the first stage of a practical trial 187 pigs were inseminated by using teaser boars to detect oestrus. Of these 35·3% became pregnant after a single insemination (sows 40·9%, gilts 35%). Average litter size was 8·8 piglets (sows 10·2, gilts 7·5). The results did not vary significantly from one boar to another.

At the second stage, 361 pigs were inseminated by a trained inseminator on the breeders' premises in 4 villages; oestrus was determined by the inseminator. Antibiotics were added to the semen in half of the inseminations. 207 (57·3%) of these pigs became pregnant after a single insemination (sows 58·5%, gilts 53·2%). The addition of antibiotics did not result in any significant improvement (58·7% with antibiotics, 55·6% without)). Average litter size was 10·3 (sows 10·7, gilts 8·3). The rate of pregnancy per village following a single insemination varied from 65·9% to 44·1%. In the village where the poorest results

were obtained, fertility with natural mating had also been poor; investigation revealed defects in the sows.

TRAUTWEIN, K., BAUER, H. & FLUHR, F. (1958). Beobachtungen zur Psychologie der Bullen, speziell zum Deckverhalten. **[Observations on the psychology of bulls, particularly mating behaviour.]**—*Zuchthyg. Fortpfl-Störung. u. Besamung* **2,** 217-234. **1944**

Some observations were made on sexual behaviour of 1,807 bulls as related to housing, feeding, disease, weather, climate, animal companionship and the "attendant" factor. More detailed work indicated 182 bulls as normally active sexually while 176 were over and 70 under active. Disinclination to serve was the commonest impairment of function. Heredity and standards of maintenance both play important parts in determining behaviour.

—F. L. M. DAWSON.

LEIDL, W., HAEGER, O. & SCHRÖDL, M. (1958). Glykokoll als Verdünnerzusatz für Bullensperma. **[Glycine as an additive to bull semen diluents.]**—*Zuchthyg. FortpflStörung. u. Besamung* **2,** 363-365. [Summary in English.] **1945**

The difference between the fertility rate of semen diluted with "Spermasol" (a proprietary gelatin–citrate diluent) to which 1·5% of glycine had been added, and that of semen diluted with "Spermasol" alone, was insignificant.—E.G.

MARTIN, I. & EMMENS, C. W. (1958). **Factors affecting the fertility and other characteristics of deep-frozen bull semen.**—*J. Endocrin.* **17,** 449-455. [Authors' summary modified.] **1946**

The fertility of 12 types of deep-frozen bull semen was investigated in 1,469 first-service cows. Factors examined were dilution rate (30, 20 and 13·3 million spermatozoa/ml., using 1 ml. per insemination), sugar in the diluent (fructose or arabinose), and equilibration time [e.t.] (1 hour or 18 hours). Only e.t. had a significant effect on fertility, 1 hour of equilibration yielding less fertile semen than 18 hours (58·4 % compared with 65·3% of non-returns to service at 3 months). Motility was affected by the sugar used and by dilution, but not by e.t. and the revival rate was affected only by e.t., but all such effects were small.

LEIDL, W. (1958). Einfluss der Hodenbiopsie auf die Samenqualität beim Bullen. **[Testicular biopsy and semen quality in bulls.]**—*Berl. Münch. tierärztl. Wschr.* **71,** 351-353. **1947**

Unilateral or bilateral testicular biopsy had an adverse effect on spermatogenesis and consequently semen quality in five normal bulls 1½–5 years old. This was proved by examination of semen twice a week for 2–3 months before and up to eleven months after biopsy.—E.G.

LEUCHTENBERGER, C. & LEUCHTENBERGER, R. (1958). Die Desoxynucleoproteide im Säugetieresperma. Eine quantitative Studie an menschlichen und Stierspermatozoen mittels Mikrospektrophotometrie und Interferenzmikroskopie. **[Quantitative determination of desoxyribonucleic acid and arginine in human and bull spermatozoa by microspectrophotometry and interference microscopy.]** — *Hoppe-Seyl. Z.* **313,** 130-137. [Summary in English.] **1948**

The desoxyribonucleic acid level in fertile human and bull semen was constant; in infertile semen the value was often low. There was no relationship between infertility and dry weight and protein content of spermatozoa. Nuclei of bull spermatozoa contained about 50%, those of human spermatozoa about 30% of arginine.

—E.G.

DAVOINE, J. (1958). Le lait comme base de dilution du sperme de chien. **[Milk as a base for diluents of dog semen.]** — *Thesis, Paris (Alfort)* pp. 57. **1949**

In *in vitro* tests skim milk sterilized at 92°C., alone or with 10% egg yolk, gave survival to 35–40 hours only at 4°C., but addition in equal parts of 5·7% glucose to the skim milk extended survival to 4 days. However, after deep freezing with these diluents plus added glycerin, survival was negligible. A less concentrated solution, 4·6% glucose in equal parts with 1% milk powder and 2·6% egg yolk, with glycerin gave 30% survival after deep freezing.

—F. L. M. DAWSON.

BECZE, J. (1958). Fajhibridek ivari működésének vizsgálata öszvéreken. **[Sexual activity in mules.]**—*Mag. állator. Lapja* **13,** 237-241. [Summaries in English and Russian.] **1950**

Histological and histochemical investigations of the semen and testicles of two male mules, 2½–3 years old, yielded a picture resembling that of hypogonadism which, in the case of a third mule, was slightly improved with 4 months' treatment with gonadotrophic hormone.

Clinical, histological and histochemical observations were made throughout a summer season on the changes occurring during the oestrous cycle in the genital organs of three female mules, 2½–3 years old, in the course of which abnor-

malities varying in degree from slight to severe were observed.

The authors considers that with hormone treatment of male mules, and with selection of females showing the least genital abnormalities, the problem of breeding mules could be approached.—A. SEBESTENY.

HEINEMANN, F. (1958). Stille Brunst und Orgasmus weiblicher Rinder als verhaltensbiologische und züchterische Probleme. **[Inapparent oestrus and orgasm in cows.]**—*Zuchthyg. FortpflStörung. u. Besamung* **2,** 235-265. **1951**

This is a review of literature tending to emphasize the role of adequate sensory stimulation in securing optimum efficiency in ovulation and nidation. No new original work is incorporated. The routine use of an immature vasectomized teaser is advocated for A.I. herds. Many cows with marked secretion of vaginal mucus will not stand to the bull.—F. L. M. DAWSON.

ANON. (1958). **Detection of ovulation.**—*Brit. med. J.* November 15th, 1213. **1952**

The need for a simple method for precise prediction of the day of ovulation is stressed. Birnberg, Kurzrok & Laufer (1958) have found that a sharp rise in the concentration of glucose in the vaginal secretions occurs shortly before ovulation in women and can be detected very simply by insertion of glucose oxidase test paper. Doyle has confirmed the accuracy of this method by laparotomy on two subjects and by an 88% conception rate to artificial insemination on that day in 27.—F. L. M. DAWSON.

BRUSH, M. G. (1958). **Adrenocortical activity in bovine pregnancy and parturition.**—*J. Endocrin.* **17,** 381-386. [Author's summary modified.] **1953**

The content of 17:21-dihydroxy-20-ketocorticosteroid in plasma of cows was only slightly higher before than after calving. A rise was sometimes seen in the last few days before calving. Except in one case where calving was difficult, there was no increase during labour. Increases on the first day or two after calving were seen in some cases, but subsequently levels were uniformly low—the difference from earlier levels being statistically significant. In general, these results differ from the human picture. Possible reasons for these findings are discussed.

LARSON, B. L. & HAYS, R. L. (1958). **An explanation for bovine parturition edema and treatment with blood protein replacements.**—*J. Dairy Sci.* **41,** 995-997. **1954**

Oedema of the mammary gland and adjacent tissues frequently develops in heifers shortly before parturition. The cause may be a decrease in osmotic pressure of the blood as a result of the fall in serum protein concentration due to the secretion of immune globulin in the colostrum.

To test this hypothesis two cattle were injected i/v with 6% dextran. The result was a reduction in oedema within 24 hours but the oedema returned after a few days.

Next four cattle were injected i/v with 300–500 ml. of 30% bovine serum albumin over a period of 3 hours. There was increased urinary excretion and a permanent reduction in oedema. The only animal which had a previous pregnancy lost weight and died with oedema of the lungs. The results support the suggestion that the condition is a result of lowering of the serum protein level but in view of the death of one animal more work is needed before such injections can have a practical application.—E. J. H. FORD.

CHWOJNOWSKI, A. & MASŁOWSKI, P. (1958). Możliwość stosowania metody masłowskiego w rozpoznawaniu ciąży u loch. **[The possibility of using Masłowski's method for the diagnosis of pregnancy in sows.]** — *Zesz. probl. Postęp. Nauk roln. polsk. Akad. Nauk* No. 11. pp. 57-60. [In Polish. Summary in English.] [Abst. in *Anim. Breed. Abstr.* **26,** 419. (1958). Signed: A.P.G.] **1955**

Preliminary investigations on pregnant and non-pregnant sows have shown that pregnancy influences the type of boric acid crystal formation in the urine. The effect can be detected even in the first weeks of pregnancy.

DZIUBEK, T. (1958). Badania wstępne nad możliwośćiami rentgenologicznego ustalania ciąży u loch. **[Preliminary investigations on the possibility of pregnancy diagnosis in the sow by means of X-rays.]**—*Zesz. probl. Postęp. Nauk roln. polsk. Akad. Nauk* No. 11. pp. 61-66. [In Polish. Summary in English.] [Abst. in *Anim. Breed. Abstr.* **26,** 419. (1958). Signed: A.P.G.] **1956**

Pregnancy could not be detected by means of X-rays until the 92nd day of gestation.

BÜHNER, F. & LIEBETRAU, R. (1958). Über die Wirksamkeit des Agostilben-E bei der Behandlung der Atrophie der Ovarien beim Rind. **[Action of "Agostilben-E" in the treatment of ovarian atrophy in cattle.]** — *Mh. VetMed.* **13,** 420-423. **1957**

Six of 33 cows and heifers with chronic anoestrus, resulting from ovarian atrophy, be-

came pregnant after service following treatment with a preparation containing a stilbene derivative and vitamin E.—E.G.

SHARAF, A. & DABASH, A. (1958). **Relative potency of some steroid hormones and related compounds on canine uterine growth.** — *Amer. J. vet. Res.* **19,** 931-934. [Authors' summary modified.] **1958**

The potency of the steroid sex hormones, oestradiol, testosterone, and progesterone, and stilboestrol, on uterine growth in immature bitches was investigated. All stimulated uterine development. Stilboestrol was most potent, especially when followed by progesterone; testosterone was second, and oestradiol third.

In ovariectomized bitches given either oestrogen alone or oestrogen followed by testosterone, progesterone, ethisterone, desoxycorticosterone, and pregnenolone, the uterus was much larger and heavier than in untreated ovariectomized bitches.

SAUNDERS, C. N. (1958). **Abortion and stillbirths in pigs—an analysis of 67 outbreaks.** —*Vet. Rec.* **70,** 965-970. [Author's summary modified.] **1959**

The findings in an investigation into 67 outbreaks of abortion and stillbirths in sows are described. In the majority no diagnosis was reached but an association with bacterial pathogens and with vitamin A deficiency was noted in a few. This preliminary survey indicates some lines along which further work might proceed.

ISOJIMA, S., GRAHAM, R. M. & GRAHAM, J. B. (1959). **Sterility in female guinea pigs induced by injection with testis.** — *Science* **129,** 44. [Authors' abst. modified.] **1960**

In adult virgin female g.pigs injected with an emulsion of homologous adult testis and Freund's adjuvant before mating, fertility was only 24% as compared with 84% in the controls. The testis-injected g.pigs had a high titre of antibodies against testis.

GARDNER, D. L. (1959). **Familial canine chondrodystrophia foetalis (achondroplasia).** —*J. Path. Bact.* **77,** 243-247. [Author's summary modified.] **1961**

The occurrence of achondroplasia in one member of each of four consecutive litters of miniature poodle puppies is described. The clinical, radiological, pathological and biochemical characteristics indicate that the canine disorder closely resembles that seen in man, cattle, and rabbits. The disease in the dog tends to be lethal, through malnutrition, and it seems to be inherited as a simple Mendelian recessive characteristic.

JOHNSTON, W. G. & YOUNG, G. B. (1958). **A congenital muscle contracture and chondrodysplasia syndrome in cattle.**—*Vet. Rec.* **70,** 1219-1220. [Authors' summary modified.] **1962**

Eleven malformed calves were born in a beef herd. The fore-limbs exhibited extreme flexure of the fetlock joint while the hind limbs were flaccid and sickle shaped. The teeth were abnormally calcified. There was evidence that the condition may be inherited as a dominant gene with a high but incomplete penetrance.

WILCOX, F. H. (1958). **Studies on the inheritance of coloboma of the iris in the domestic fowl.**—*J. Hered.* **49,** 107-110. **1963**

Incidence of coloboma (congenital defect of the iris) in the offspring of a cock with unilateral coloboma and similarly affected hens or apparently normal hens with a family history of this condition was 22% in the first and 27·9% in the second generation. Incidence in females was twice as high as in males.—E.G.

See also abstr. **1691** (abortion in foxes); **1711** (leptospirosis in an artificial insemination stud); **1970** (report, Milk Marketing Board); **1974** (report, Australia).

ZOOTECHNY

ANON. (1958). AUSTRALIA. **Australian Wool Bureau. Annual Review 1957-58.** pp. 40. Melbourne: The Bureau. **1964**

In 1957 there were 149,319,000 sheep in Australia, and 106,744,000 were Merino. Australia possessed 16% of the world's sheep and produced 29% of the world's wool (1,426 million pounds of greasy wool). Sale of wool brought in £338 million.—R.M.

HELBIG, K. (1958). Untersuchungen über die wirtschaftliche Bedeutung und die Erblichkeit der Langhaarigkeit beim schwarzbunten Niederungsrind. **[Economic importance and inheritance of long-hairedness in Friesian cattle.]** — *Dtsch. tierärztl. Wschr.* **65,** 431-437. [Summary in English.] **1965**

H. considered long hair in Black Pied Lowland cattle (German Friesian), at one time regarded as a sign of hardiness and robustness, an undesirable feature, because of its adverse effect on heat regulation, particularly during the warm season, and consequently on health and productivity. Individuals with this condition,

which is inherited as an autosomal, dominant gene, should be culled.—E.G.

Ross, J. G. (1958). **The estimation of live weight of Nigerian cattle from linear body measurements.**—*Bull. epiz. Dis. Afr.* **6,** 355-358. [In French pp. 359-361.] [Author's summary modified.] **1966**

The modified "Johnson Formula" and the Heart Girth Scale, are compared in the Sokoto Gudali zebu, and in the N'Dama and the Muturu, two small humpless types of cattle. The Heart Girth Scale method appeared as efficient as the other more complex method. Results are compared with previous work in zebu and in European cattle.

Morgan, J. T., Green, F. R., Costain, R. A. & Williams, E. F. (1958). **The effect of hexoestrol implantation on growth, efficiency of food utilization and carcass quality in pigs.**—*J. agric. Sci.* **51,** 370-376. [Authors' summary modified.] **1967**

The main features of hexoestrol treatment were: Body length was significantly increased by 9·75 mm. The percentage lean in the carcass was increased by 0·82%, representing approximately 1¼ lb. more lean meat in a 155 lb. carcass. Body fat was reduced but this was not reflected in a significant change in back fat measurements. No changes could be detected in the thyroid or adrenals, but whereas male castrates showed little effect of treatment on other organs apart from a certain amount of urethritis, the intact female manifested major changes in the genital tract. The uterus was greatly enlarged and ovarian activity obviously reduced. There was no response to treatment in terms of growth rate or efficiency of feed utilization.

TECHNIQUE AND APPARATUS

Herrmann, R. G. (1958). **Adaptation of calcein titration method for calcium determination in tissues without ashing.**—*Proc. Soc. exp. Biol., N.Y.* **99,** 777-779. [Author's summary modified.] **1968**

A convenient and rapid procedure is presented for determination of calcium in tissues and lipaemic serum without the necessity for ashing.

Hunter, G. (1959). **Micro-determination of calcium and magnesium in blood serum and cerebrospinal fluid.**—*Analyst* **84,** 24-28. **1969**

The metal indicators murexide and Eriochrome black T have been used for the determination of Ca and Mg in blood, but despite their theoretical and practical advantages over the older methods they have not beeen found satisfactory for clinical use. The methods described in this paper were used for several thousands of determinations of Ca and Mg in blood serum and c.s.f. with consistently good results, and, as they are at once simple and accurate, they appear to be well suited for routine use.

REPORTS

Great Britain. (1957). **Milk Marketing Board. Report of the Production Division, 1956/57. (No. 7.)** pp. 148. Thames Ditton: The Board. [Items of veterinary interest pp. 102-125.] **1970**

Tests were carried out to compare heat-treated liquid skim milk with the reconstituted milk powder, as a diluent for semen. The tests were not enough to justify final conclusions, but it is useful to know that in a foot and mouth disease emergency the reconstituted product can be expected to give comparable results as a substitute diluent.

A survey on bovine fertility was carried out in the north of England. It appears that the conception rate in herds using natural service is higher than in those using artifical insemination. The results show no difference between the north-east of England and the north-west.

Research has been done on Spinal Disease in old bulls and abnormal changes in the bone structure of the vertebral joints (Ankylosing Spondylosis). This produces fusion of adjacent vertebrae. Out of 37 bulls examined when slaughtered, 31 showed lesions of spondylosis. Investigations were carried out to ascertain if "Standings" disease is necessarily associated with spondylosis. In view of the large number of bulls affected with spondylosis which did not show spastic symptoms it would seem that there is no connexion between this syndrome and the spinal disease under review; the characteristic behaviour of the latter being clearly distinguishable from that of "Standings" disease.

With regard to *Brucella abortus* infection in bulls, the present regulations safeguard the users of artificial insemination against any spread of Brucellosis by semen.

—D. S. Rabagliati.

GREAT BRITAIN. (1958). **Pig Industry Development Authority. First Annual Report and statement of accounts for the year ended 30th September, 1958.** pp. 32. London: The Authority. 1s. **1971**

The pig Industry Development Authority was established by Act of Parliament in 1957 with a view to improving efficiency in the production, marketing and distribution of pigs and the production, processing, manufacture, marketing and distribution of pig products, and improving the quality of pigs and pig products. It is financed by a levy of 2d. on every pig slaughtered, which brings in an annual income of about £475,000. The Authority intends to finance research which will be done by existing organisations, such as the Agricultural Research Council, and it will offer research grants to graduates both in general agriculture and in veterinary science. A veterinary advisory committee of 7 veterinary surgeons has been set up. The Authority has assumed responsibility for progeny testing, pig recording and premium boars and has initiated a survey of artificial insemination in pigs.—R.M.

I CANADA, ONTARIO. (1956). **Report for the year 1956 of the Ontario Veterinary College, Guelph, Ontario.** [JONES, T. L.] pp. 55. Guelph, Ontario: Department of Agriculture. **1972**

II. CANADA, ONTARIO. (1957). **Report for the year 1957 of the Ontario Veterinary College, Guelph, Ontario.** [JONES, T. L.] pp. 52. Guelph, Ontario: Department of Agriculture. **1973**

I & II. Work done by the various departments of the College included the following: leptospirosis (an increasing incidence of *L. pomona* infection in cattle and pigs in Ontario was noted); blood typing for bull registration, parentage tests and freemartinism in twin calves; vaccination against virus enteritis of mink [see also *V.B.* **26**, 3486]; variations in the amount of protein-bound iodine in the plasma of cattle; respiratory diseases of poultry; artificial insemination of pigs and goats; and many other items, some of which have been published in veterinary periodicals.

A DEPARTMENT OF RESEARCH was formed and started operation in 1957 with a staff of 4 research workers. It was intended that this department would be free to engage in full-time research, and work in progress included the effect of dietary changes on coagulation and vascular disease in pigs (with regard to atherosclerosis); pneumonia in calves and pigs; properties of the virus of porcine pneumonia; enzootic pneumonia of calves; serology and antigens of *Past. multocida*; disinfection for staphylococcal mastitis.

In the MASTITIS LABORATORY about 40,000 milk samples were examined culturally each year. The commonest findings were haemolytic staphylococci (41·7% of samples in 1956, 46·6% in 1957), and *Str. agalactiae* was in second place (26% in 1956 and 31% in 1957). An unusual finding was *Serratia marcescens* [*Chromobact. prodigiosum*] in 0·61% of samples in 1957 and as the cause of mastitis in one herd.—R.M.

AUSTRALIA. (1957). **Ninth annual report of the Commonwealth Scientific and Industrial Research Organization for the year 1956-57.** pp. 179. Canberra: A. J. Arthur, Commonwealth Govt. Printer. 10s. 6d. **1974**

In Victoria VIBRIOSIS is a more common cause of INFERTILITY in cattle than trichomoniasis. The long-term trial with brucella Strain 19 vaccine showed that there was no advantage from re-vaccination. Some highly susceptible cows did not withstand the first challenge during pregnancy and although not all aborted they excreted virulent *Br. abortus*.

The only satisfactory serological test for BRUCELLOSIS in sheep is the complement-fixation test.

The causal organism of MYCOTIC DERMATITIS, *Dermatophilus* (*Dermatonomus*) *congolensis*, was isolated from small residual lesions on the face and ears of ewes; it grows readily in ovine amniotic fluid.

For the treatment of CONTAGIOUS FOOT ROT of sheep topical applications of various preparations were tried. Only chloramphenicol aerosol was highly effective. In the field under wet conditions only 10% chloramphenicol (in methylated spirits) resulted in a high proportion of cures. Bacteriological studies on "scald" revealed organisms resembling *Fusiformis nodosus* but the organism was not isolated in culture. The growth requirements of this organism were further studied and the value of digested prekeratin or wool keratin was confirmed.

After tail inoculation, the organism causing BOVINE CONTAGIOUS PLEUROPNEUMONIA may appear transiently in the peripheral blood in the first two hours. It is considered that it is in this phase that localization in the joints of young cattle may occur. Local tail reactions and c.f. reactions occur much less frequently in calves 5–9 months old than in adults. A formalin-killed vaccine was being tested, and freeze-drying of live vaccine was being examined.

Studies on the life cycles of the parasites which cause TICK FEVER were begun.

Studies on MYXOMATOSIS dealt with (a)

selection of rabbits for resistance, to determine to what extent ability to acquire resistance to one virus may be associated with ability to acquire resistance to others, and (b) further studies on epidemiology in the field.

The distribution of LICE on mammals is related to grooming behaviour, to the presence of fibres (hair or wool) of suitable diameter for the attachment of the eggs, and to suitable temperatures. In "patch tests" against *Psorergates ovis* organic phosphorus compounds were promising at concentrations between 0·1 and 0·01%. Malathion and diazinon were effective against body lice of sheep at 0·0001% and diazinon was effective against the ked.

Studies on the SHEEP BLOWFLY showed that as autumn advances the egg batches laid by *Lucilia sericata* produce increasing percentages of diapausing larvae to enable the species to survive the winter. *L. cuprina* has no corresponding mechanism. Females of *L. cuprina* commonly oviposit in groups and show a preference for dark and damp cavities in the fleece. *L. cuprina* females will mate only when the ovaries are mature.

Studies on *Boophilus microplus* showed that zebu × Shorthorn cattle were more resistant than Shorthorns, but there were great variations. Tick toxins were examined electrophoretically and the toxic fraction ixovoglobin was examined spectrophotometrically and its prosthetic group identified as belonging to the haematins.

The nature and action of the toxin of *Ixodes holocyclus* and the nature of pink cuticular excretion were studied.

The mechanism of resistance to TICK INFESTATION in cattle is a hypersensitivity reaction associated with an increase in mast cells in the the skin.

The degree of resistance to DDT (alone among the chlorinated insecticides) has remained sufficiently low to enable control by dipping more frequently at higher concentrations. Investigations with *B. microplus* showed that the synergists DMC and DME augmented the effect of DDT against DDT-resistant ticks by decreasing the viability of eggs rather than by increasing the mortality of the ticks. "Kelthane" (1, 1-bis (chlorophenyl) trichloroethanol) was equally toxic to ticks susceptible and resistant to DDT. Variations in response to organic phosphorus compounds have complicated studies on the reactions to other insecticides of ticks resistant to chlorinated compounds. A strain resistant to dieldrin and toxaphene had some resistance to an organic phosphorus compound which was thought to be a vigour tolerance rather than true resistance.

DDT was 13 times more toxic for ticks kept at 20°C. than at 30°C. Dieldrin and toxaphene were less toxic at the lower temp., and diazinon was equally toxic at both temperatures. Progressive accumulation of dieldrin on the hair of cattle after repeated dipping did not occur. Diazinon disappears rapidly from the hair, usually in 3 days. When used alone it gave disappointing results but when combined with DDT, results were very good. The organic phosphorus compounds DDVP (dimethyl dichloro vinyl phosphate), "HOE 2675", Dow "ET-57" and Bayer "L13/59" are of little promise, but Bayer "21/199" showed great promise. "Perthane" (diethyl diphenyl dichloroethane) was not promising. Injections of lindane, dieldrin and aldrin into rabbits infested with *H. bispinosa* gave results similar to those recorded in cattle.

The relatively rapid dying of tick larvae on pastures had enabled systems of pasture resting to augment control and had reduced the number of dippings required. Survival and oviposition by ticks treated with DDT was being examined to decide whether cattle should be dipped once or twice before entering rested pastures.

FASCIOLIASIS: copper pentachlorphenate had advantages over copper sulphate as a molluscicide against *Simlimnaea subaquatilis* when sprayed from a high-volume boom. I/m inj. of carbon tetrachloride was effective against *F. hepatica*. Hexachlorethane and higher doses of CCl_4 both kill most migrating flukes in the liver of sheep.

Exsheathement of the infective larvae of certain sheep NEMATODES depends on an extrinsic stimulus from the rumen. When a challenge dose of *T. colubriformis* larvae was given to sheep which had had an earlier infestation, they often lost weight although the egg count did not rise. P.M. examinations showed heavy infestations with mature worms which were not producing eggs. Towards the end of an initial infestation egg counts may decline but numerous worms may persist for some weeks and maintain unthriftiness in the sheep. When initial infestations were removed with phenothiazine and were followed by a challenge dose of larvae it appeared that resistance increased with increasing duration of the initial infestation from 4 to 8 weeks. Sheep challenged 2 weeks after treatment were less resistant than those challenged 8 weeks after treatment.

Infestations in sheep with *H. contortus* and *H. placei* behaved similarly with regard to prepatent period, duration and degree of infestation, termination, response to challenge, occurrence of "self-cure" and presence of circulating antibodies measured by the c.f. test.

Challenge doses of *T. colubriformis* larvae, given to a new group of lambs each month, showed that lambs born in spring may remain susceptible until late next autumn despite a moderately heavy natural infestation. Challenge doses at 8 weeks of age appeared to stimulate resistance. In Western Australia lambs born in winter remained susceptible until next autumn.

In field trials at Armidale, N.S.W., worm-free lambs were grazed for two weeks and then held in pens until slaughtered 10–12 weeks later. The majority of *H. contortus* were picked up between December and March. *Ostertagia* spp., *Nematodirus* spp., and *Trichostrongylus* spp. were recovered at a fairly uniform rate throughout the year.

In studies on ANTHELMINTICS for sheep, 2-chloro-7-methoxyphenothiazine, which was very effective against the oxyurid worms in mice, was not as effective as phenothiazine against *H. contortus, T. colubriformis* or *Oe. columbianum*. Cadmium oxide (2·5 g.) given into the rumen was very effective against *H. contortus* and removed 50% *Oe. colubriformis*. Higher doses were toxic. A mixture of piperazine hexahydrate and nicotine injected into the abomasum was effective against *H. contortus* and *Oe. columbianum*. Papain was highly effective against *H. contortus* when given into either rumen or abomasum, but had variable effects against *T. colubriformis* and was not effective against *Oe. columbianum*. Addition of cetyltrimethylammonium bromide to nicotine sulphate slightly increased its effects on *T. colubriformis*, but did not increase the effects of 1:8-dihydroxyanthraquinone. Neither dieldrin nor dichlorophene was effective against *H. contortus*. *O,O*-dimethylhydroxy-2,2,2-trichlorophosphonate was highly effective against *H. contortus* and showed promise against *Oe. columbianum* but not against *T. colubriformis*. Doses of 10 g./100 lb. body wt. are likely to be toxic.

Of eight anthelmintics tested against *Strongyloides papillosus* only "I.C.I. 16452" and gentian violet were active. Effects were erratic and gentian violet was fatally toxic in some sheep. Trials of sprays to destroy larvae in soil were inconclusive.

A number of compounds, including 60 essential oils, were screened against larvae of *H. contortus*. Some correlations between anthelmintic activity and chemical structure were found among the essential oils.

Monthly administration of 1:8-dihydroxyanthraquinone gave remarkable control of *Chabertia ovina*, but the worm burdens were light and there were no differences in weight gains between sheep treated with this compound and those treated with copper sulphate–nicotine sulphate and controls.

In studies on PARASITIC GASTRO-ENTERITIS in cattle there was little difference in infestations in Hereford, Hereford × zebu and Hereford × Africander calves grazed together and exposed to *Cooperia* spp., *B. phlebotomum, Oe. radiatum*. Infestations with *H. placei* were heaviest in the Herefords, lightest in the Hereford × Africander .

Summer temperatures appear to be lethal to larvae of *H. placei* and *Cooperia* spp. in dung pats. Although complete development can occur in the pat in the absence of rain, larvae may not move on to the pastures until stimulated by rain. Larvae surviving in the pasture remain infective for at least 14 weeks.

Infestation with *B. phlebotomum* may play a minor role in the production of low copper levels on pastures which provide only marginal copper intake.

In cattle piperazine hydrate was effective against *Oe. radiatum* and *Ostertagia* spp. but had little effect on *H. placei, Cooperia* spp., *Bunostomum phlebotomum* and *Trichostrongylus* spp. Closure of the oesophageal groove did not affect its efficiency. Piperazine-1-carbodithioic acid was effective only against *Oe. radiatum* when given by mouth, but when injected into the abomasum it was effective against *H. placei, Cooperia* spp. and *Oe. radiatum*. Toluene given by mouth as an emulsion after premedication with sodium bicarbonate was highly effective against *H. placei, B. phelbotomum* and *Cooperia* spp. Overnight starvation was essential for high efficiency. Xylene and tetrachlorethylene in emulsions were effective against the same species as toluene. 1:8-dihydroxyanthraquinone was effective against *H. placei, Cooperia* spp. and *Oe. radiatum*. Doses of 4–5 g./100 lb. body wt. caused purging and inappetence. The organic phosphorus compounds DDVP, diazinon, chlorthion, Bayer "L21/199" and malathion showed little or no anthelmintic activity, but *O,O*-dimethyl-2,2,2-trichloro-1-hydroxyethyl phosphonate, *O,O*-dimethyl-hydroxy-2,2-trichlorophosphonate, Bayer "L13/59" proved highly effective against *H. placei, Ostertagia* spp. and *Oe. radiatum* at 2 g./100 lb. body wt. and at 5 g./100 lb. it removed all *B. phlebotomum* and a high percentage of *Cooperia* spp. It was effective against 4, 8 and 14-day-old *H. placei* and *Cooperia* spp., 14-day-old *Oe. radiatum* and 14 and 28-day-old *B. phlebotomum*. There were no toxic effects at 8 g./100 lb. body wt. but red cell cholinesterase activity was temporarily decreased.

The prophylactic action of Co against

PHALARIS STAGGERS is due to proliferation within the rumen of micro-organisms capable of destroying the toxic principle of *Phalaris tuberosa*. The small amount of Co required can be provided by administration of cobalt pellets.

In WHEAT POISONING of sheep histamine played no part in the condition. I/v administration of physiological saline at 3 to 5 ml./min. prevented death and demonstrated the importance of the progressive severe fall in plasma volume. No evidence could be found of the ruminal toxin described by Dougherty in the U.S.A.

SHEATH ROT (BALANITIS) has increased in wethers grazing the improved, legume-rich pastures in the New England region. Of various treatments only surgical opening of the sheath gave lasting results.

Sheep tolerated saline WATER containing 0·1% magnesium chloride for 16 months. Higher concentrations were toxic and affected sheep lost their appetite.

With regard to COBALT DEFICIENCY, a detailed study was being made of the metabolism of fatty acids in vitamin B_{12} deficient sheep. Supplements of 10 mg. Cu/day raised the Cu content of liver of grossly Cu-deficient sheep to normal levels in a few months. The extent of the rise was not influenced by 100 mg. Mo/day with or without 2·9 g. sulphate daily. When sheep on deficient pastures had low liver Cu values haemosiderosis was present. Administration of the Cu supplement with or without Mo and sulphate reduced Fe to normal.

Studies on PREGNANCY TOXAEMIA revealed that the drain by the foetus can account completely for the hypoglycaemic response of ewes in late pregnancy to undernutrition or fasting. The resulting hyperketonaemia is primarily the result of a failure in acetyl coenzyme A utilization in the liver and of acetoacetate utilization in peripheral tissues. Glycerol invariably reduced blood-ketone levels, but glucose did not. The general hypothesis that pregnancy toxaemia, regardless of predisposing conditions, is primarily due to glucose insufficiency by itself and that failure to respond to glucose or glycerol therapy is due to permanent brain damage, was shown to be untenable. The diabetic nature of the syndrome is confirmed by the presence of hyperketonaemia. Pronounced adrenal hyperactivity preceding the onset of clinical symptoms was indicated by a "break" in the wool. None of 15 affected ewes responded to glycerol therapy, however early or often it was given.

Diaminopimelic acid, a characteristic constituent of the bacterial fraction of the rumen contents of sheep, was under study as a marker in physiological studies of the flow of ingesta through the fore-stomachs.

When the pancreas was removed or the pancreatic duct ligated sheep continued to thrive.

The addition of peanut oil to drinking water or to a hay supplement of cattle grazing a phalaris–clover pasture reduced the incidence of BLOAT but 2 of 15 animals in each group died from the condition.

Work on POISON PLANTS included the pathological and pharmacological effects of the pyrrolizidine alkaloids, the isolation of toxic agents from *Atalaya hemiglauca*, the nature of the damage due to alkaloids in *Lupinus varius*, and the effects of *Swainsona* sp.

Biological studies of skin and wool growth included the endocrinology of wool growth (effects of the anterior pituitary, adrenal cortex and thyroid); effects of early nutrition on skin and wool development; histology of the skin of sheep and marsupials; skin grafting in mice; lamb birth coat and adult fleece characters; physical definition of "DOGGY" WOOL; fleece structure and wool production; relation of food intake to wool growth, seasonal cycle of wool growth; inheritance of susceptibility to FLEECE ROT.

Studies on INFERTILITY and physiology of reproduction in sheep included FOETAL DWARFISM due to high environmental temperatures seasonal variations in fertility; induction of heat in spayed ewes; double mating of ewes; metabolism of the fasting new-born lamb; temp. regulation of new-born lambs; lactation in Corriedale ewes; influence of light on the breeding season of the Merino; lambing behaviour in maiden and mature ewes; and factors associated with neonatal mortality.

Studies on beef production included antipyrine to measure body water; environmental control of coat changes; coat length and heat tolerance; adaptation to tropical environment; development of hair follicles and associated glands; and dentition.

Studies in animal GENETICS included fleece mutants in sheep; resistance to infestations (internal parasites, ticks) in cattle; productivity of strains and breeds in a tropical environment; dentition; inheritance of horns in the Merino; selection for and against twinning; and inheritance of electrolyte concentrations of erythrocytes.—H. MCL. GORDON.

NEW ZEALAND. (1957). **Thirty-third annual report of the New Zealand Dairy Board, for period of 12 months ended 31st July 1957.** pp. 141. Wellington: The Board. [Items of veterinary interest pp. 105-118.] **1975**

Results of field surveys on herd wastage, mastitis, metabolic disorders, short lactation, contagious abortion and on efficiency of production are given in tables. Herd wastage in six Herd Improvement Association areas was compared with that for the whole country. For the whole country the wastage was 17·78% of which 6·76% was due to disease. The greatest loss from disease was due to sterility and abortion, 3·63%; closely approximating to the results obtained in 1949 and 1950.

Culling for all diseases except bloat, increases fairly steadily with age. Older cows are more susceptible to MILK FEVER and GRASS STAGGERS so that culling rates probably indicate the incidence of these diseases amongst the different age groups. There were a certain number of MILK FEVER cases before calving and about 30% on the day of calving. All except a small proportion of the rest occurred within three days after calving.

Very few cows had attacks of GRASS STAGGERS before calving or on the day they calved. About 60% occurred within a month of calving and about 30% later on. There was no indication that the attacks were connected with calving.

Comparison based on the results of artificial insemination in 20 herds showed that 48% of the cows reacting to brucella and 66·6% of non-reactors did not return to the first service.

—D. S. RABAGLIATI.

BOOK REVIEWS

COHRS, P., JAFFÉ, R. & MEESSEN, H. [Edited by.] (1958). Pathologie der Laboratoriumstiere. **[Pathology of laboratory animals. Vols. 1 & 2.]** pp. xix+799 & xv+803. Berlin (Göttingen & Heidelberg): Springer Verlag. DM 298. **1976**

In 1931 Jaffé published his "Anatomie und Pathologie der Spontanerkrankungen der kleinen Laboratoriumstiere" which was designed to help the experimenter to determine whether the pathological changes he observed were likely to be experimental or spontaneous. Jaffé's book has been much valued all over the world as a book of reference and its revision was long overdue. The present work is even larger, occupying two volumes, each about the size of the original. It is edited by three well known experts, Professor Cohrs from the Veterinary School in Hanover, Professor Jaffé who now resides in Caracas, and Professor Meesen of Dusseldorf. They are assisted by a further 44 contributors from many countries, including North and South America, Sweden, Austria and Switzerland, although most of them are from Germany.

The book covers a wide range of small laboratory animals, but excludes the dog, cat and hen, which are dealt with in veterinary literature. Special chapters are devoted to birds, fish, amphibia and reptiles, but in the rest of the book the various species are considered in order in each chapter, according to their importance in the particular context. For instance, Volume 1 deals with the anatomy and pathology of the different organs and tissues, chapter by chapter, and most space is devoted to the mouse, rat, hamster, guinea-pig and rabbit.

The second volume has chapters dealing with infectious diseases due to bacteria, viruses, fungi and animal parasites, with serological diagnosis, heredopathology, gerontology and neoplasms. This volume also contains the chapters dealing entirely with birds, fish, amphibia and reptiles.

Each chapter ends with a comprehensive list of references, running altogether to many hundreds and selected from periodicals and books in all languages. Illustrating the 802 pages there are 512 illustrations, mostly black and white photographs and photomicrographs, but with a number of colour plates. Paper, printing and binding are of a very high standard.

This is a most valuable work of reference which will not date and must inevitably find a place in libraries wherever small laboratory animals are used. Each contributor has presented his subject well, as one would expect when authorities such as Rubarth write about the liver, Hieronymi the skin, Pallaske infectious diseases and Dobberstein neoplasms, to mention only a few of the contributors by name.

The two volumes must be purchased together, and only the second contains an index. The cost in Gt. Britain would be about £23 which seems to the reviewer to be far too high. So many books and journals appear each year that research and teaching institutions, with their limited library funds, have inevitably to select what they can afford to buy. For £23 one might purchase any of a number of periodicals for periods of 4–6 years, or perhaps a selection of 8–10 substantial text-books or monographs. For these reasons "Cohrs, Jaffé, & Meesen" may well have to be omitted from many a purchase list, which is a great pity. Surely it is

possible to produce a comparable work at a lower price, especially when it stands alone in its field and would have a world-wide circulation.

These volumes can be recommended with confidence to any who can afford them. It will be worth while visiting a neighbouring library to consult them.—E. G. WHITE.

BARNES, D. E. & TAYLOR, D. (1958). **Radiation hazards and protection.** pp. x+178. London: George Newnes Ltd. 30s. **1977**

This is the first reasonably complete and readily accessible body of information, on the subject, which is suitable for most people in the veterinary and allied fields who wish to make use of radioactive isotopes and other sources of radiation.

For the full exploitation of these techniques the potential user must be able to approach their use with confidence and understanding. In this book the reader can find the answers to most of his doubts and queries and will readily appreciate that there is no danger in the proper application of these techniques. The authors are prominent in this field and therefore speak with authority.

The essential requirement in the practical approach to radiation protection is the measurement of the hazard, and a strong feature of the book is the thorough consideration given to instrumentation. The twenty-three chapters deal with the following topics: Introductory chapters on the basic theory; nine chapters on instruments, measuring and monitors; permissible doses, and radiation output; building and laboratory design; shielding and personal protection; contamination and waste disposal; transport of radioactive material, and legal aspects; radiation from nuclear weapons.

A perusal of the suggestions for further reading serves to emphasize that this volume will fill an important gap in the literature.

—M. K. LLOYD.

ANON. (1959). **New and nonofficial drugs, containing descriptions of therapeutic, prophylactic and diagnostic agents evaluated by the Council on drugs of the American Medical Association.** pp. xxvii+687. Philadelphia (& Montreal): J. B. Lippincott Co. London: Pitman Medical Publishing Co. Ltd. 30s. **1978**

The general features of this annual have been described in our review of the 1958 edition [*V.B.* **28,** 2712]. The 1959 edition is brought up to date by 42 additions, all of them new drugs aproved by the American Medical Association. It is interesting to note that 20 of the 42 new drugs act on the nervous system; they include 9 tranquillizers, 1 sedative, 3 analgesics, 1 anaesthetic (methitural); 1 anticonvulsant (ethotoin) and a curious diphenylmethane compound (azacyclonol hydrochloride) which banishes hallucinations from the human mind.

Only three new antibiotic preparations have been added, one of which is ristocetin; there is a new long-acting sulphonamide (sulfaethidole). There are no new anthelmintics.

Unusual drugs are hydroxione sodium succinate, which has the structure of a steroid yet depresses the central nervous system; it may represent the first of a new class of anaesthetics; iproniazid, which was introduced as a tuberculostatic agent but was subsequently found to be more valuable for improving the mood and behaviour of patients with mental depression; florantyrone which acts as a hydrocholeretic and may therefore qualify as one of the few genuine cholagogues.—R.M.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review]

BRADLEY, O. C. (revised by Grahame, T.) (1959). **Topographical anatomy of the dog.** pp. xiv+332. Edinburgh (& London): Oliver & Boyd. 6th edit. 35s.

EVERS, N. & CALDWELL, D. (1959). **The chemistry of drugs.** pp. 415. London: Ernest Benn Ltd. 84s.

HALLAUER, C. & MEYER, K. F. (edited by) (1958). Handbuch der Virusforschung. 4. Band. **[Handbook of virology. Vol. 4.]** pp. xv+688. Vienna: Springer Verlag. 251s. 6d.

HITCHCOCK, F. C. (1959). **Saddle up. A guide to equitation and stable management including hints to instructors.** pp. 286. London: Stanley Paul. 25s.

ISAACS, A. & LACEY, B. W. (edited by) (1959). **Virus growth and variation. 9th symposium of the Society for General Microbiology held at the Senate House, University of London,**

April 1959. pp. viii + 272. Cambridge: University Press. 35s.

KAYS, J. M. (1958). **Basic animal husbandry.** pp. xiii + 430. Englewood Cliffs, New Jersey: Prentice-Hall, Inc. $9.35.

LERNER, I. M. (1958). **The genetic basis of selection.** pp. xvi + 298. New York: John Wiley & Sons, Inc. London: Chapman & Hall Ltd. 64s.

SMYTHE, R. H. (1959). **Clinical veterinary surgery. Vol. 1. General principles and diagnosis.** pp. x + 362. London: Crosby Lockwood & Son. Ltd. 42s.

WELCH, H. & MARTI-IBAÑEZ, F. (edited by) (1959). **Antibiotics annual 1958-1959.** pp. xvii + 1107. New York: Medical Encyclopedia, Inc. $12.00.

The Editor will be glad to receive publications relating to Veterinary Science and cognate subjects in order that they may be dealt with in the *Veterinary Bulletin*.

Reports of Departments, Special Reports, reprints, etc., etc., should be sent as soon as they are issued.

Books for Review.

The Editor will be glad to receive books for review in the *Veterinary Bulletin*.

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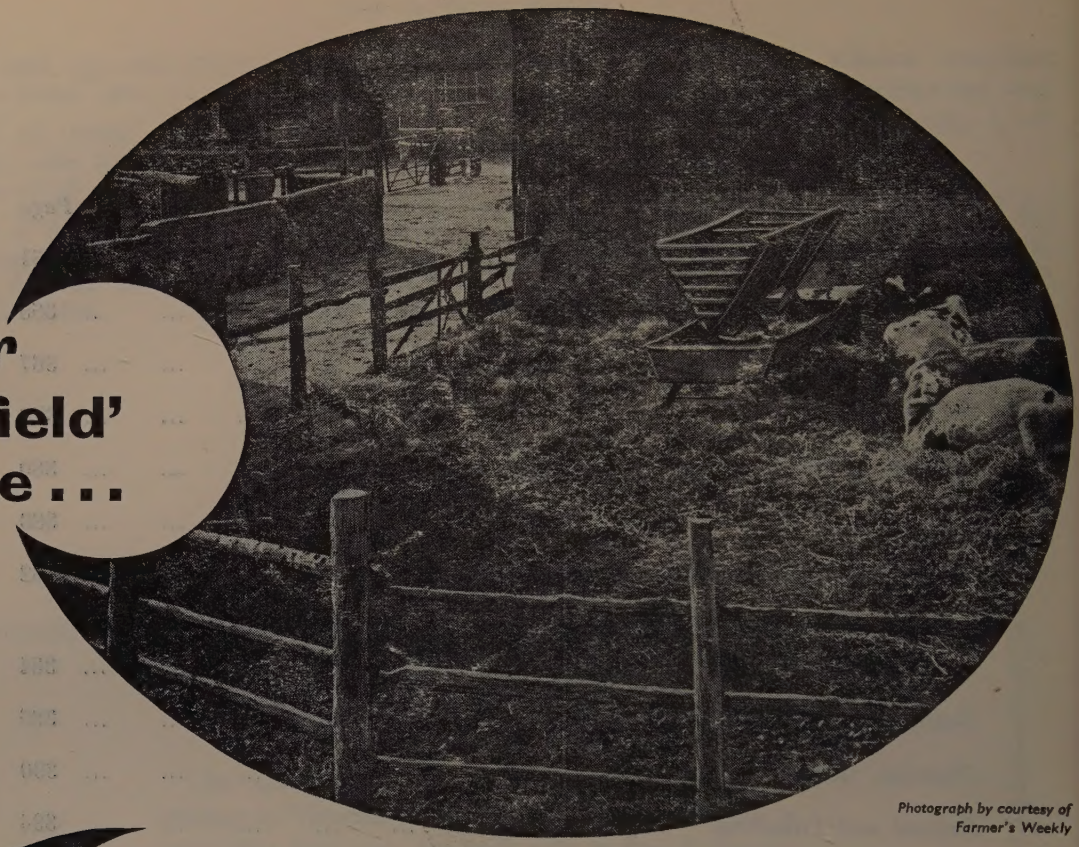
CONTENTS

	Page
Diseases caused by Bacteria and Fungi	351
Diseases caused by Protozoan Parasites	365
Diseases caused by Viruses and Rickettsia	367
Immunity	378
Parasites in Relation to Disease [General]	380
Parasites in Relation to Disease [Arthropods]	380
Parasites in Relation to Disease [Helminths]	382
Spontaneous and Transmissible Neoplasms and Leucaemias [Including Fowl Paralysis]	384
Nutritional and Metabolic Disorders	386
Diseases, General	390
Poisons and Poisoning	394
Pharmacology and General Therapeutics	396
Physiology, Anatomy and Biochemistry	398
Public Health, Veterinary Services and Veterinary Education	401
Reproduction and Reproductive Disorders	402
Zootechny	407
Technique and Apparatus	407
Reports	408
Book Reviews	409
Books Received	410

NOTE. The position of the Author Index has been changed. It now faces the last page of text.

for 'field' use . . .



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